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AN INVESTIGATION IN TO THE PATHOGENICITY AND ANTIGENICITY OF DIFFERENT VACCINIA AND VARIOLA STRAINS

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It is not generally known that there are a number of different dermal vaccinial strains, which can be differentiated by their variable actions on different tissues of the body. Haagen and Crodel (1936) examined five lymphs from different State Vaccine Institutes in Germany and found great dissimilarities not only in the potency for the rabbit's skin but in effects following intratesticular inoculations. Kaiser (1937) remarked that certain calf-lymphs have qualities not connected with titre which lead to the production of oedema and haemorrhage and that they have a remarkable tendency to generalization, although they do not have a higher titre than other lymphs in which these properties are absent. Stevenson and Butler (1939) have divided dermal strains of vaccine into benign and noxious strains. So far as the writer is aware no attempt has been made in any of the Vaccine Depots in India to make a careful selection of the strain most suitable for the manufacture of calf lymph. In view of the importance of the problem of small-pox to India, it was considered advisable to study a number of different vaccinia and variola strains.

Samples of calf lymph were obtained from different vaccine depots in India and abroad and certain variola strains (including a strain from a case of haemorrhagic small-pox) were also changed into vaccinia in the laboratory. It has not been considered advisable to give the actual names of the depots supplying the different strains, they will be indicated as SH, BGL, NTL, BLM, NKM, MDS, LHR, C.C., London and Liverpool.

The samples of calf-lymph were maintained in the laboratory by consecutive epidermal passage in rabbits. The Superintendent, Calcutta Corporation Vaccine Depot, kindly supplied me with calf-lymph prepared from certain strains after proper rejuvenation.

These strains were used for the simultaneous vaccination of volunteers on different arms, the results are presented in Table I.

Table I—Showing the Results of Revaccination on Employment of Different Strains of Vaccinia Virus

Strain	*Potency*	*No. of persons vaccinated*	*Positive*	*Negative*
London ..	10^{-4}	22	21	1
C.C. ..	10^{-3}	22	10	12
London ..	10^{-4}	11	9	2
Liverpool ..	10^{-3}	11	10	1
Hæmorrhagic	10^{-3}	11	10 (pustules)	1
Liverpool ..	10^{-4}	11	10 (1 vesicle) (9 pustules)	1

The C. C. lymph was employed for routine vaccination and revaccination and had a potency of 1/1000 as required by the Therapeutic Substances Act of Great Britain. It gave a much smaller percentage of takes on revaccination as compared with the London strain, the reactions produced were also less intense. Out of three other strains employed, the London strain was less reactive than Liverpool strain, and the haemorrhagic strain was the most potent of the lot.

There were definite oedema and flush surrounding the pustules in the case of the haemorrhagic strain.

Three cases who had been vaccinated with the C.C. lymph, one giving a minute pustular reaction leading to scarring, were revaccinated a fortnight later with the Liverpool strain, all showed the presence of pustules receding from the 6th to the 9th day onwards. This observation shows that even a successful "take" does not always afford full protection against a heterologous strain of the vaccinia virus itself.

Another strain was obtained from a Vaccine Depot in India (SH strain), it was titrated intradermally in a rabbit and was found to be weakly positive in 10^{-2} dilution. Out of 10 primary vaccinations performed with the lymph, 2 were negative. One child reacting negatively to the SH strain was revaccinated with the rejuvenated London strain and gave a positive pustular reaction. Out of the 14 revaccinations performed with this weak lymph, only two were positive. One of the negative cases was revaccinated on one arm with the SH lymph and on the other with London lymph. There was only an immediate reaction with the SH lymph, but the London lymph gave rise to a pustule surrounded by a red and infiltrated area, the corresponding glands were enlarged and there was a slight febrile reaction, the local reaction receded from the 8th day onwards.

These experiments strongly suggest that a strain which gives the greatest percentage of takes on revaccination is probably the most useful revaccination.

In view of the severe reactions encountered in certain cases, a potency of less than 10^{-4} is recommended for lymph used in primary vaccination.

Personal investigation—The various strains were tested by application to the scarified cornea and skin of guinea-pigs. Strains BLM, SH and BGL gave good vesiculo-pustular reactions in the guinea-pigs' skin and also produced marked keratitis. Strains LHR, MDS, NKM and NTL generally produced an infiltration of the skin of guinea-pigs without the production of papulo-vesicular lesions, only one sample of the MDS strain treated with clove-oil gave rise to satisfactory lesions in a guinea-pig. The lymph from NTL and NKM fairly often failed to produce keratitis in guinea-pigs on application to the scarified cornea. Such guinea-pigs showed a marked keratitis when tested with the strain obtained from Liverpool.

On epidermal passage into rabbits, NKM and NTL strains gave poor lesions even on 3rd passage, the LHR strain produced fairly good lesions on 2nd passage, whilst the MDS strain gave good confluent reactions on first passage. The 4th passage in rabbits caused the appearance of satisfactory reactions with the NKM strain, but the NTL strain although giving better reactions was inferior to the MDS strain. After three consecutive passages in rabbits, the NTL, LHR and NKM strains produced good lesions in the guinea-pig's skin in the majority of animals. These experiments clearly demonstrate the low pathogenicity of NKM, NTL and LHR strains.

The various vaccinial strains were also tested by intratesticular injection into rabbits and guinea-pigs. The injection of NKM and NTL strains as received from the Vaccine Depots produced lesions only in certain localized areas, whilst the BLM and SH strains gave rise to extensive involvement of the tissues; the potency of these lymphs on intradermal titration of rabbits varied from 10^{-2} to 10^{-3}. The strains were rejuvenated by consecutive epidermal passage in rabbits and the intradermal titre rose from 10^{-4} to 10^{-5} on the 4th passage, the effect on the rabbit testis was again determined. Some of the strains (NTL, MDS, BGM, London, SH and BGL) caused marked exudation and infiltration of the tubules leaving the interstitial tissue relatively unaffected, the degree of congestion was variable. The NKM, LHR and Liverpool strains produced marked infiltration of the interstitial tissue, the degree of congestion varied but the LHR strain seemed to cause hæmorrhages. The London and Liverpool strains rejuvenated by consecutive epidermal passage in rabbits produced infiltration and œdema of tunica vaginalis and the scrotal skin of rabbits. The BGM strain was identical with London strain, it had been occasionally rejuvenated by a single rabbit passage, it did not produce any naked eye reaction in the tunica vaginalis or scrotal skin.

Intracerebral injection—The earlier work carried out by the writer at Edinburgh has shown that neurotropic vaccinial strains produced encephalitis regularly in rabbits previously immunized epidermally. Due to the relative scarcity of rabbits, the intracerebral testing was done on rabbits previously employed for dermal titrations. The suspensions of the dermal strains were treated with ether to destroy or diminish the number of concomitant organisms and were injected intracerebrally after removal of the ether. The results are presented in Table II.

TABLE II
INTRACEREBRAL INJECTION OF VARIOUS DERMAL STRAINS OF VACCINIA

Strain	*No of rabbits injected*	*Dead*	*Alive*		*Presence of virus in brain*
			Ataxia	*No symp.*	
Liverpool	2	2	..	..	*½+
London	2	..	..	2	..
Laussane	4	..	..	4	..
BGL	8	7	1	..	½+
MDS	3	1	1	1	0/1
LHR	3	1	..	2	0/1
NKM	5	1	..	4	0/1
Hæmorrhagic	20	9	8	3	½+
Alastrim	10	3	2	5	½+

* Number of rabbits showing presence of virus out of the total number of animals examined.

Out of the nine strains examined, three produced encephalitis in a majority of injected animals, the virus was recoverable irregularly from the brain.

Antigenic differences—Rabbits were vaccinated with 0·2 c.c. of suspensions of different vaccinial strains and bled after 10 days, the sera thus obtained were used to determine their inactivating power against different strains. Ten-fold serial dilutions of rabbit lymph prepared from different strains were made and 0·1 c.c. of the virus suspension was mixed with an equal amount of antivaccinial serum and injected intradermally. The results of one of the experiments are presented in Table III.

The sera did not act on the different vaccinial strains to the same extent, there was a suggestion of the presence of minor antigenic differences. More work is required before any definite conclusions can be drawn.

TABLE III—SHOWING THE DIFFERENT AMOUNTS OF ONE STRAIN OF VIRUS BEING NEUTRALIZED BY DIFFERENT VACCINIAL SERA

NKM virus alone 10^{-4}	+NKM serum 10^{-2}	+LVR serum 10^{-2}	+LHR serum 10^{-2}	+NTL serum 10^{-3}
NTL virus alone 10^{-3}	+NKM serum 10^{-3}	+LVR serum 10^{-3}	+LHR serum 10^{-4}	+NTL serum 10^{-4}
LHR virus alone 10^{-3}	+NKM serum 10^{-3}	+LVR serum 10^{-3}	+LHR serum 10^{-1}	+NTL serum 10^{-3}
Hgic virus alone 10^{-3}	+NKM serum 10^{-3}	+LVR serum 10^{-4}	+LHR serum 10^{-3}	+NTL serum 10^{-3}

Vaccination of smallpox convalescents—Twenty convalescent smallpox cases were vaccinated with a sample of calf-lymph obtained from Liverpool, no papules or vesicles were produced showing thus the presence of marked immunity. Out of 25 cases vaccinated with the C.C. lymph, only six gave negative results the rest showed reactions varying from the formation of minute papules to definite pustules in nine cases. Eighteen convalescent cases were vaccinated with the MDS calf lymph, of whom 13 showed no reaction, three developed definte pustules, one had only a minute vesicle and another a papule. This observation is in favour of a suggestion of an antigenic variation in the vaccinial strains tested.

Variola strains—The foregoing data definitely showed there were differences between the various vaccinial strains, whether these strains were derived from one parent variola strain or from different variola or vaccinia strains not known. In the absence of any definite information about different variola strains, an attempt was made to determine if there were any differences in the local strains of variola virus as well. The culture of the variola virus on the chorio-allantoic membrane of the growing chick-embryo gave negative results. The pathogenicity of the various strains available was next studied as follows:—

Material taken from the pustules of six cases of smallpox was injected into a number of splenectomized monkeys. Generalized variola infection was produced by three of the strains, the other three produced only a local necrotic nodule, which gradually retrogressed. The virulence of the virus as tested in monkeys and the clinical condition of the patient were not correlated, the lesions produced by the virus from a case of modified smallpox were as marked as those by the pus from a case of semi-confluent smallpox. The monkeys varied in their resistance, one variola strain produced generalized infection in one monkey and not in the other. It was not possible to inject exactly the same dose of the virus into the different monkeys, but the same amount of ether-treated purulent material was injected in each case. There was thus a suggestion that there were variations in the pathogenicity of different strains.

In view of the differences in vaccinial strains, it was of interest to know whether vaccinial strains derived from different clinical cases of variola were identical in nature. The virus from a case of hæmorrhagic smallpox and from another case diagnosed as Alastrim were dealt with as follows:—

Hæmorrhagic smallpox—Blood drawn from a case of hæmorrhagic smallpox was divided into two portions, one was received in citrated saline and fractionated, the other portion was allowed to clot. The intradermal inoculation of the various fractions (leucocyte and platelet fraction, serum, blood-clot) and whole blood into a guinea-pig caused the appearance of hæmorrhagic and necrotic lesions. The nodules were removed and passaged successively in guinea-pigs by application of the ground up material to the sacrified cornea and skin and by intradermal injection. Definite keratitis and pustules in the skin were produced on the 4th passage, the virus tended to deteriorate on further repeated passages in guinea-pigs, the 8th passage produced only abortive dermal lesion although keratitis was quite definite. After one passage through the guinea-pig, the virus was also successively passaged in rabbits. The intradermal injection of the virus into rabbits previously immunized dermally with various vaccinial strains gave rise to papular formation. After three such passages, the virus was passaged into stock rabbits, definite epidermal lesions were produced on the 7th passage in new rabbits.

Alastrim—The definite occurrence of Alastrim in India does not seem to have been thoroughly investigated. Dr. B. C. Chatterjee of the Campbell Hospital, Calcuta, kindly referred to the writer a mild case of smallpox in a non-vaccinated individual. The intradermal injection of one part of the material from the lesions into a splenectomized monkey failed to produce any lesion. The same monkey was reinjected with a strain from a case of semi-confluent smallpox on the other side of the body on the 9th day, a definite necrotic nodule was observed on the 5th day of reinoculation. There is thus a suggestion that Alastrim occurs in India. A rabbit was injected intradermally and intraocularly with the alastrim-vesicle contents suspended in saline. A definite nodule was produced in the skin and ophthalmitis with keratitis was also marked within 48 hours. The eye and the nodule were ground up with sand and applied to the scarified cornea and skin and also injected intradermally. Definite vaccinial vesicles were produced on the 7th passage.

The intratesticular inoculation of the hæmorrhagic strain into rabbits caused hæmorrhages and marked infiltration of the interstitial tissues and tubules, the outline of the latter being lost in certain areas. An intratesticular injection into one testicle seemed to effect the other side also to some extent. On the other hand, the Alastrim strain produced a slight lymphocytic exudate in a very few tubules.

The Alastrim and hæmorrhagic strains were cultured on the chorio-allantoic membrane of the growing chick embryo. Both produced definite greyish-white patches, the hæmorrhagic strain caused the death of the embryos, the Alastrim strain was apparently innocuous. The London strain and some other vaccinial strains obtained from variola cases were not lethal to chick embryos.

Sera were rasied against both the strains and cross-neutralization tests were performed. The hæmorrhagic strain was neutralized better by the corresponding serum than by the Alastrim serum, the same held good for the Alastrim strain. One protocol is shown as under:—

Hgic virus 10^{-5}	+Hgic serum 10^{-1}	+Alastrim serum 10^{-5}	Alastrim virus 10^{-5}	+Hgic serum 10^{-1}	+Alastrim serum Und:

These results suggest that there are differences in variola strains.

In view of the differences in vaccinia and variola strains, extensive field trials are indicated to determine as to which of the former would be most suitable for human vaccination. It might be that a mixture of two or more strains would be more suitable for vaccination purposes.

Summary—An examination of vaccinial strains obtained from different sources showed that they varied markedly with regard to their action on the cornea, skin, testicle and brain of different laboratory animals.

2. There was a suggestion of minor antigenic differences in the different strains examined.

3. The vaccinial strains derived from cases of hæmorrhagic small-pox and alastrim respectively differed markedly in their pathogenicity, minor antigenic differences were also discernible.

4. Revaccination of volunteers showed that certain strains produced appreciably higher percentage of takes than others.

5. Extensive field trials are indicated for the selection of the most suitable type of strain required for vaccination and revaccination.

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[NOTE.—It would have been more helpful if the author had not omitted the very important and delicate test *viz.*, the complement fixation test for determination of antigenic differences amongst various strains of the virus. Such a test was adopted by Brain to determine the antigenic similarity between the herpes and varicella viruses and found satisfactory.

From the results obtained in the experiments with the 1st and 3rd group of cases, there is little suggestion of an antigenic variation in the vaccinial strains tested. Let the author take about half a dozen Indian and foreign strains of almost equal potency, test them for bacterial sterility, raise anti-vaccinial sera in rabbits and then carry on homologous and cross complement fixation tests to establish his contention. It is quite possible that there are strains showing diversity of antigens but further work is necessary before the matter can be taken as conclusive.—ED., *J. Indian M. A.*].

NUTRITIONAL MACROCYTIC ANAEMIA AND HISTAMIN-FAST ACHLORHYDRIA

(11 Cases)

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At a time when considerable disagreement exists upon a number of features of the nutritional deficiency diseases, it is perhaps not quite irrelevant that those, who come across such disorders, should record their findings.

In this paper are described 11 cases of macrocytic nutritional anæmia which were connected with histamin-fast achlorhydria.

All cases were observed, from May, 1947 to October,1948, among employees of the Barsi Light Rly. Company and their families, representing a population of just over 5,000 souls.

During the time of review altogether 26 in-door patients were treated for nutritional deficiency syndromes at the Rly. Hospital, Kurduwadi. In 18 of these patients gastric analysis was done. Free hydrochloric acid—although usually in diminished quantity was present in 7 of these cases, whereas the remaining 11—those who are described in this paper—showed histamin-fast achlorhydria.

CASE REPORTS

The examination of the cases under review included taking of a detailed dietary and medical history. The latter was partly obtained from the records of the Barsi Light Rly. dispensaries. Hæmoglobin was estimated according to Sahli's method. Gastric analysis was done after a gruel test meal; Histamin was injected after withdrawal of the 3rd specimen. The fæces were examined for ova, occult blood and protozoa. Sternal aspiration was not performed in the course of this investigation as that procedure did not seem to be sufficiently indicated in view of its potential dangers.*

Two patients were Mohammedans, nine were Hindus; among the latter were 7 Brahmins.

Sex Incidence—Eight patients were males, three females.

Medical histories—In all cases the onset of the disease was insidious, the patients being unable to recall the exact date of the beginning of their troubles. In 4 cases there was a history of impaired health of less than one year's duration. In these cases no previous treatment had been given. In the remaining 7 cases the patients had been ill for many years on and off and had undergone treatment of some sort, usually at sveral different places.

At least 5 of our cases had suffered from malaria shortly before their admission. Three gave a history of amœbiasis, 3 suffered from latent syphilis with positive serum reactions. Seven gave a history of repeated, gross infestation with ascaris lumbricoides.

Dietary histories—8 out of 11 cases were strict vegetarians, eating neither meat nor eggs, the remaining 3 patients were not accustomed to eat meat owing to poverty. These 3 patients lived mainly on jawar bread and vegetables. All diets were markedly deficient in proteins and vitamins, mostly the vitamin 'B' complex.

Clinical Features—On the whole, the blood pictures of our cases were not quite characteristic, as the majority of the patients had been treated somehow or other prior to admission. It is likely that by this

*In all cases of macrocytic anaemia, sternal pucture is an essential procedure to find out whether there is any megaloblastic reaction or not. Supposed dangers if it is done can easily be avoided with care.—ED., *J. Indian M. A.*

interference the condition of the hæmopoietic system was altered.

All cases showed poikilocytosis, anisocytosis macrocytosis and polychromasia.

The R.B.C. was below 1,600,000 in 3 cases, the lowest count recorded being 1,200,000. The hæmoglobin value of the last mentioned was 30 per cent.

In 6 cases the R.B.C. was between 2,000,000 and 3,000,000. Two cases, who had been treated shortly before admission with irregular injections of liver and aneurin, had initial R.B.C.s. of 4,000,000 each and hæmoglobin values of 80 per cent and 90 per cent respectively.

Both these cases, notwithstanding the good blood picture, exhibited other manifestations of gross nutritional deficiency, namely œdema, diarrhœa, glossitis, dermatosis, mental depression and various neurological symptoms.

In all cases, with one exception only, the blood picture responded promptly to treatment, whereas the other features of the syndrome remained more resistant to therapy.

Glossitis was present in all cases under review, characterised by a more or less violent inflammation of the tongue, usually at the tip or near the margins, and burning of the mouth which was not always confined to the tongue. Additional stomatitis was, however, found in a few cases only.

The appetite was poor in all cases, and feeding of the apathetic and emaciated patients presented a serious problem to our nursing staff.

Diarrhœa was quite common and was severe in 5 of our 11 cases.

Two patients showed a tender and enlarged liver; 7 cases exhibited dermatological changes, characteristic of deficiency of the vitamin B_2 complex, namely symmetric hyperpigmentation, thickening and scaly desquamation of the epidermis, cheilosis and pigmentation of pressure points.

Nervous system. Paræsthesias, burning of the soles and cramping of the legs were observed regularly and were very troublesome in 7 cases. Temporary absence of the deep reflexes of the legs at the beginning of treatment was recorded in one case. The reflexes were elicited in that case on recovery.

Subacute combined degeneration with spastic paraplegia of the lower extremities, increased deep reflexes, absent abdominal reflexes and extensor plantar response was encountered in one case.

The mental disposition was appreciably altered in almost all cases. Most of our patints suffered from a moderate degree of depression, but severe mental disorders were not encountered. However, one patient, who subsequently died, was stuporous during the whole duration of hospital treatment and finally deeply comatose.

Eyes. Keratitis was observed in 2 cases. A certain degree of conjunctivitis was the rule in all cases. Two cases showed multiple retinal hæmorrhages.

Thinning and depigmentation of the hair was recorded once.

Anasarca was present in 4 cases, but a slight degree of ankle œdema was recorded, at one time or another, in almost all our cases.

Seven cases showed irregular pyrexia—apparently not caused by malaria or other complicating diseases—the fever lasted from 3 to 6 weeks and subsided with the gradual disappearance of other clinical manifestations. In some cases this sign was very marked, the chart showing sharp intermissions with evening temperatures up to 103 degrees.

The fractional test meals were as a rule, repeated several times, in order to exclude occasional misreadings.

As mentioned above, there was, in all cases, complete achlorhydria, irresponsive to histamine injections.

Treatment

Liver was given, in all cases, by means of injections of a crude extract (Teddington Chemical Factory, Bombay) in doses of 2 c.c. daily or on alternate days. In 6 cases, which were hypochromic and had a colour index of 1 or below, iron was also applied.

We gave it as ferrum carbon saccharatum, in doses of 30-45 grains. It was made up in pills with marmite and yeast powder according to the formula:

R/ Ferri Carbon Sacchar.—grs. 300, Marmite Yeast Plv. q.s. f. pill No. 100.

Such pills are easily digested and never pass the intestinal tract unchanged as Blaud's pills, prepared in the usual way often do. The content of marmite and powdered yeast is moreover apt to enhance the hæmatinic effect.

In addition to liver and iron a high caloric, high protein diet as well as intensive vitamin treatment were used.

In devising a suitable diet we had to take into account the dietary habits of our patients. In many cases we found it impossible to make them take meat, the most obvious component of a high-protein-diet. As a substitute, we chose a buttermilk,—Attah—Sweet-oil—Jaggery mixture as main item of our diets. This mixture (O.A.B.J.) was originally devised for the treatment of malnutrition in infants, but was found to be useful also in the dietary treatment of adults (Koenigsfeld, 1948). The mixture contains about 1,000 calories per 1,000 c.c., but by increasing the amount of jaggery, oil and attah *ad lib.* it can be made even stronger without ill-effects. Most of our patients were able to take, during 24 hours, about 2,000 c.c. of this mixture in addition to their usual diet, thus adding to their food about 2,000 calories and most of their requirements of protein.

As an additional food we offered eggs and liver soup which after some persuasion was accepted by most of our patients.

Plasma transfusions were given to one patient with anasarca which resisted all other treatment. Two bottles of dried plasma, reconstituted to double strength were given. The result was dramatic and almost immediate.

Multivitamin tablets were given in doses of 2 tabs, 3 times a day, together with Brewer's yeast, the latter in an average dosage of 6-8 gm. a day. Nicotinic acid, which seems to have a decisive influence on the diuresis, esp., the disappearance of anasarca, was given in doses of 300-500 mgm. a day by mouth, or in doses of 50 mgm. hypodermically. Riboflavine, in doses of 9 mgm. a day, was given, to a few patients only.

All patients received also hydrochloric acid in doses of ½-1 drachm 3 times a day.

Results

One patient died. He had been admitted to hospital a fortnight before his death in a desperate condition with anasarca, a severe marcrocytic anæmia (R.B.C. 1,200,000), intractable diarrhœa and hypostatic pneumonia. During the past 2 years he had been treated several times with courses of liver injections with only temporary success. He was treated by us on the lines indicated above; however, he failed to respond to therapy and died in coma of circulatory failure.

The 10 surviving cases have been re-examined repeatedly. Seven are under maintenance treatment with liver injections, yeast and hydrochloric acid; 3 patients have left the station, and we have lost contact with them.

The cases under follow-up treatment are fit for work and no recurrence of their acute symptoms has been recorded.

The achlorhydria remains unchanged in all 7 cases.

The spinal condition of the patient with signs of sub-acute combined degeneration is satisfactory. There is still a certain degree of spastic ataxy, and the Babinski remains positive but the patient, who during the acute stage was unable to stand on his legs, is now able to walk more than 3 miles a day without difficulty.

Discussion

The finding of histamin-fast achlorhydria in 11 patients with nutritional macrocytic anæmia out of 18 cases in whom a gastric analysis was done, was not anticipated and came somewhat as a surprise, since the general opinion agrees that the association of the 2 conditions is not the rule.

Fairly and Carmichael Low (1933) are of the opinion that by the presence of HCl in the gastric juice tropical macrocytic anæmia may be distinguished from pernicious anæmia, which moreover, according to these authors, is uncommon in India.

Beaumont and Dodds (1945) maintain likewise that in tropical macrocytic anæmia there is no achlorhydria.

Spies and his collaborators (1948) in a recent article, observe that in nutritional macrocytic anæmias free gastric HCl after histamine is "usually present".

Chaudhari (1948) also mentions that gastric analysis shows hydrochloric acid, but usually below the normal level.

The nutritional ætiology of the condition described above appears to be well established. In all cases there was evidence of a diet lacking in essential proteins, calories and vitamins.

The clinical manifestations themselves also showed clearly the nutritional origin of the syndrome. Apart from the anæmia with its spinal complications there were symptoms and signs of nutritional deficiency in all cases, namely symmetric dermatosis and pigmentation, gastro-intestinal disturbances, conjunctivitis, keratitis and wasting.

It is by the presence of these accepted signs of dietary deficiency that the disease can be distinguished from true pernicious anæmia.

But is a sharp distinction between Addison's anæmia and nutritional macrocytic anæmia really justifiable? Perhaps one day in the near future the anæmia syndromes will be regrouped on aetiological lines, and the sharp border line between Addison's anæmia and nutritional anæmia will disappear.

As all the cases under review have been found among a very limited section of the population within 18 months, it would appear that the condition is not so uncommon here, histamin-fast achlorhydria probably being the rule rather than the exception in cases of nutritional anæmia in this part of India.

The medical histories of our cases showed a high percentage of ascariasis. Not less than 7 out of our 11 cases had been suffering from that disability at one time or other.

The possibility of a connection of the achlorhydria with ascariasis may, therefore, be borne in mind, although at the present stage no conclusion from that coincidence should be drawn,—especially in view of the frequent occurrence of ascariasis in the Dekkan.

Summary

Histamin-fast achlorhydria was found in 11 cases of macrocytic anæmia treated in 1947-48 among a population of 5,000 souls. All patients were vegetarians and their diets, prior to treatment, were grossly deficient in all essentials.

All cases showed various signs of malnutrition in addition to the anæmia.

The high incidence of ascariasis in the medical histories of the cases described has been stressed.

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INDUSTRIAL MEDICINE : ITS RELIGIOUS ASPECT

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"Everybody has forgotten religion, that is why everything is going wrong everywhere," was the lament of an illiterate Indian industrial worker dissatisfied with his working conditions as well as with affairs of his trade union. A world under the grip of a philosophy of hedonism cannot but be divided against itself, and such a division must create more and more emotional stresses amongst individuals and nations. The industrial worker cannot escape his share of them, and the industrial psychologist is fighting heroically against them with objective methods of experimental science, but is not succeeding half as well as an Indian saint working subjectively through a religious philosophy of life.

Mahatma Gandhi was the founder and father of the Ahmedabad Textile Union. He picked up a rotting mass of the humblest and most depressed humanity and remodelled it in a shapely cast of human dignity. He taught a down-trodden people to stand erect again. This union has to-day a membership of 65,000 textile workers, and has an annual income of 2·½ lakhs of rupees. The association maintains about 20 centres which cater to the intellectual and social needs of its members by setting up libraries and reading rooms and facilities for physical culture and recreation. It conducts 6 day-schools and 2 night-schools, and one nursery school. Scholarships are made available to working-class students receiving education in secondary schools. The association also runs a well-equipped dispensary with an average annual of 75,747. A programme of opening ante-natal and post-natal clinics, and medical examinations of the workers and their dependents is making satisfactory progress. The association has its own press and publishes a fortnightly magazine. The affairs of the association are governed by boards composed of the elected representatives from amongst its members. These boards are reconstituted every two years, and they have to maintain a paid staff of 236 persons to carry on their work.

How ever did the Mahatma achieve so much from so little? One hears a lot of talk about freedom now-a-days. Political freedom is most in the air but hardly any spiritual freedom. You cannot talk to a labour leader without hearing a sermon from him on the freedom from want, but what a human being wants most is inner peace. The industrial physician's panacea for increasing production is freedom from illness, but mental and religious attitudes have so much to do with bodily health. There is however one freedom which covers all other freedoms—freedom from self. The Mahatma succeeded with the industrial worker of Ahmedabad, because he taught him to strive for this freedom. He needed lieutenants for his work. He asked for only one qualification in them. They must be reformers who want to reform themselves before others. He placed before them a higher philosophy of life, a religious creed of truth, non-violence and service, and he succeeded because he lived it in his own life with them and for them.

The East dreams, the West acts; the East is passive and rather worldly, the West is dynamic and practical. Such are the slogans which a type of occidental thought developed through objective methods of experimental science flings against oriental philosophies of subjective methods. Upto a point there is truth in the slogans, but there is fallacy too. What motivates each end is the search for happiness in life on this earth and not in any other life elsewhere, and one of the main instruments of research the oriental mind uses is meditation. But meditation is not an end in itself. It is an attempt at integration of mind and its functions in order to evolve action on a higher plane and of a higher type to make life fuller and richer with a more lasting happiness, freed from the fears, frustrations and maladjustments of modern civilization based on a hedonistic philosophy of life.

Nor is meditation the only instrument of oriental research for attainment of happiness. There are at least four such main ones, and they are adapted to the different natures and temperaments of men. Any one or combination of them can lead a person to attain his natural goal of happiness in this world, and the instruments that Mahatma Gandhi used whereby he achieved so much from so little, are Karma-Yoga,—realisation through work and duty, and Bhakti-Yoga,—realisation through devotion and prayer. He woke up a vegetating mass of humanity into action by placing before it a religious ideal to live and die for. He gave the industrial worker of Ahmedabad inner peace if not material prosperity. This worker is an exact prototype of the industrial worker anywhere else in India,—illiterate and ignorant, eating the same unbalanced diet, and living in unhealthy slums. But all the same he is imbued (thanks to Mahatma Gandhi) with a bit more of the spiritual idealism, the abiding heritage of his land. Whereas most of the trade unions of the land have a shifting membership and a changing leadership torn with party politics and personal jealousies, the Ahmedabad Textile Union is steady and progressive with a religious concern for amelioration of the condition of its members. To-day illegal strikes are the order of the day all over the country, but they are an unknown quantity to this union. Its members have given up liquor and it is not often that they quarrel with their employers; and when they do fight, they do so non-violently, and to teach their employers a bit of religion; and once started there is no going back and there are no blacklegs.

The West has its own methods of experimental science, and the East cannot help admiring, appreciating and even imitating them, for amongst the four main paths advocated by oriental philosophy for realising a man's own divinity, one is "Gnyana-Yoga,"—realisation through knowledge. But what confounds the East is the absence in the western methods of any serious attempt at an approach to the concept of the wholeness of life. The four main paths of oriental research are known as Yogas and Yogas mean methods of union. So when science picks up a particular func-

tion of the body or of the mind and studies it apart from all the rest, oriental thought trained to look out for unity amongst diversity cannot help asking, to what purpose? to what end? Nor can it help concluding that science divorced from religion is humanity mortgaged to Satan. The last world war is proof thereof, and the growing fear of an approaching third war is another.

Science dissects and interdissects and has now reached the stage of splitting the atom. The bewildered oriental mind wonders how long it will take them to split up the world in such tiny atoms as to make it unfit for human habitation. But when we read of achievements of their industrial nurse we feel reassured that she will not allow any such devilish development of science. Her religion, not of her birth or her rituals, but the religion she lives daily in her work-a-day life and imparts to others is mightier than their science.

A sick workman is a piece of humanity broken into bits. The physician picks up one to study it under his stethoscope, the bacteriologist wants another for his microscope, the psychologist a third one and so on. And each of them brings his own particular knowledge to bear on the particular bit, and draws particular inferences from it, sometimes right, sometimes wrong. But in the end it is the nurse who gathers up the various bits and reconstructs a whole from them with the virtue of her motherhood and the alchemy of her smile. While scientists keep busy sharpening their intellects in this or that particular direction the nurse enlarges her heart to include in it the whole of humanity.

McGrath has said in her book "Nursing in Commerce and Industry" that industry needs a superior nurse. It is better if she had used the word religious in place of superior, for only such a nurse as lives religion in her life can be a superior one. I cite an experience.

We are responsible for the running of two creches. The matron of one is a qualified intellectual type well up in English, and of the other an unqualified religious type hardly knowing any English worth the name. Last year an American professor started in Bombay a training class for women in child guidance clinics. Though the lectures were to be given in English we were yet anxious that the unqualified matron join the class, as we felt that she was more likely to capture the spirit of the training, through the practical work if not the lectures. She herself was suffering from an inferiority complex and brought up half-a-dozen excuses, but she was overruled and practically coerced into joining the class. The professor was kind enough at our request to supply her with case-taking forms in her own mother-tongue. Within a fortnight it was reported that she was one of the best pupils of the class, and to-day we find that there is far more cheerfulness in her creche than the other, and far more friendliness between the staff and the children.

It is acknowledged all over the industrial world that the most successful leader of the safety first movement in industry is not one who has the highest scientific training, but one who can best impart to others the divinity within himself, and thus bring out from them their own.

Psychotherapy is a creditable advance western science has made in treatment of psychogenic neurotic conditions. But it does not go as far as it should and never will unless it is supplemented by a sound philosophy of life. Merely to relieve the pain of a mental conflict through release of emotional tension is like relieving renal colic with an opiate. It does not cure the disease permanently. For this the colic needs a surgical operation and a change in diet and other daily routines, and the mental conflict integration of the mind and its functions, and a new orientation on the meaning of life. That however is only possible by replacing the philosophy of hedonism with something higher. Swami Akhilananda in his book "Hindu Psychology" has said "the real removal of the disease can only take place when psychiatry and religion in the broadest sense of the term, amalgamate, co-operate, and co-ordinate properly."

Mere absence of illness or release of emotional tension is not positive health. To realise a true concept of positive health of an industrial worker the physician has to supplement curative first aid with industrial hygiene, and the psychologist has to practise psychotherapy in a religious background. The West has achieved wonderful progress in industrial hygiene. The East has much to learn from the West for advancing industrial health on the physical plane. All the same it has a definite contribution to make towards its progress on the mental plane.

The progress of science at the mechanical end of industries is simply marvellous. The disturbing element however is that side by side there is a great increase in the number of strikes all over the world. Evidently a purely mechanistic theory of life cannot advance human relations. For this some humanizing of the system is necessary. The need of the hour is increased production,—more goods, and still more goods, but "People produce—not machines." What is more important is the man behind the machine. It may be said to the credit of science that there is no mechanical problem it cannot tackle successfuly, but it has yet to learn how to use its discoveries to advance the fundamentals of life. Hopeful signs are however visible on the horizon of the post-war era. It was exactly through the objective methods of scientific investigation that a psychologist like Henry Link staged "The Return to Religion." Such a happy transformation is now apparent in several other directions too. Manufacturers of machines are now more and more for incorporating humanics in the designs and techniques of their machines, and the recent trend of colour-conditioning machines is a laudable move in the right direction. Manufacturers are realising more and more that human nature is subject to moods when what is wrong appears as right, and are more and more particular to devise guards on machines that will protect a worker against such evil moods also. This is the only way to solve successfully the burning and most taxing problem of industry to-day,—strained management-labour relations. Human relations can only im-

prove through fusion of science with religion, and it is most natural that such a fusion takes place at the industrial medicine end.

The literature of industrial medicine is replete with thoughts on morale, motivation, supervision, group psychology, human factor, management-labour relations, etc. But they are all pawns on the chess-board of industrial medicine which move to the dictates of ancient and eternal verities of life like 'do unto others as you would have them do unto you.' Modern industrial psychology lends support to this view. This science is more and more for proving the ultimate goodness of human nature, and that co-operation not conflict is its inner aim, and through upholding the true fundamentals of life, it makes a very near approach to Swami Vivekananda's definition of religion,—as "manifestation of the divinity that is already in man." Truly industrial medicine is religion rediscovered by science, or, at least, should be.

PERITONITIS FOLLOWING NON-PENETRATING TRAUMA

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Medical depositions become more debatable when trauma is claimed as the etiological factor in the causation of an internal disease. In surgical conditions the role plyed by trauma may be obvious, while in internal disease it is extremely difficult to discern. In such cases, a comprehensive knowledge of pathology is essential to enable the medical witness to render sound testimony which will enable the court to arrive at the truth. This aspect of medical science is not stressed in the medical curriculum, nor has the practical importance of this subject in relation to cases of criminal violence and accidents been fully realised in our country. The science of trauma and its relation to internal diseases has well advanced in Europe and United States of America owing to modern social legislations and compensation laws existing in those countries and to the rapid increase in the number of accidents and accident insurance. It is with a view to stimulate interest in those who deal with medicolegal work and compensation laws that the case below is reported.

Case Report

On 9th January 1948 at 10 P.M., V., a man of 40 years previously healthy received a blow with the broad stem of a palmyra-leaf on the left side of his abdomen. After the assault he developed distension of the abdomen, nausea and vomiting and did not pass urine or fæces. On the next day at 5 P.M. he reported himself at the Government Hospital, Yellamanchilli for treatment. Marked tenderness of the abdomen and a linear light blue discoloration 3" × ¾" over the left iliac fossa were noted. After enemata and catheterisation he was directed for surgical treatment to the King George Hospital, Vizagapatam. On 11th January at 2 A.M. he was admitted into the surgical wards of this Hospital. The patient was ill; tongue coated, abdomen distended, with marked tenderness and rigidity in the left iliac fossa. The pulse rate was 86 per minute, temperature 97·4,° respirations 24 per minute, and blood pressure 115/90. No discoloration over the abdominal wall was seen.

On the same day at 9 A.M. under local and general anaesthesia he was operated on by Dr. R. Mahadevan. There was purulent material in the peritoneal cavity. The pelvic colon was bound down by inflammatory adhesions and around it and in pelvis there was a large quantity of pus which was aspirated by suction. No obvious injury to any viscera could be localised. Left inguinal colostomy was done and the abdomen drained. The patient expired 59 hours after the injury at 9 A.M, on 12-1-1948.

On requisition from the police, medicolegal autopsy was conducted at 3 P.M. on 12-1-1948. The body was well nourished and the abdomen was distended. The light blue discoloration was not present over the abdomen. Coils of intestine were found matted together with flakes of pus. The intestines were somewhat inflated, but no perforation could be found. There was only one place on the entire intestinal tract where there was any evidence of injury, and this appeared to be a contusion of the pelvic colon one inch distal to the colostomy wound. The pelvic colon at this area was bound by inflammatory adhesions. The contusion was 2" in length, the wall of the colon was thickened and indurated but there was no solution in the continuity of the wall of the intestine. There was a brownish area of diffuse submucous hæmorrhage. The lungs (448g.) were congested. The liver (1265g.) was also congested. The right kidney (143g.) was enlarged and the left kidney was absent (unilateral renal agenesis). The brain (1372g.) was also congested. Other organs of body were normal. From the pus at autopsy, *Bact. coli* was isolated.

The diagnosis was (1) diffuse purulent peritonitis due to *Bact. coli* infection, (2) thickened, indurated lesion of the wall of the pelvic colon with a diffuse brownish submucous hæmorrhage. Death was regarded as due to peritonitis from escape of coli bacilli through the lesion in the pelvic colon.

Comment

Non-penetrating injuries of the intestines are usually encountered in victims of assault such as the result of a blow or a kick on the lower abdomen. Blunt impacts due to falls or industrial accidents account for many lacerations of the intestine or mesentery. Counseller and McCormack (1935) found in a review of the literature upto 1935, that in 1,183 reported cases of non-penetrating intestinal trauma the commonest site of injury was the jejunum. Next in order of involvement was the ileum, duodenum and large intestine. Injuries of this type were more frequently seen in adults than in children and more so in thin than in obese individuals. According to Moritz (1942) the important characteristics of this form of trauma are: (1) the frequent absence of any external wounds or bruises and (2) the frequent

occurrence of a long interval (two to six hours) between injury and the onset of clinical signs and symptoms.

Non-penetrating trauma over the abdomen may result in contusion or laceration of an intestinal loop. In contusions, great importance must be attached to bleeding into the wall of the intestine. This focus might become a nidus for the growth of invading organisms or they may develop into necrosis which may later on result in late perforation. Laceration of an intestinal loop might be caused either by crushing or by bursting or by extreme overstretching and tearing of the loop. Any of the above can produce traumatic peritonitis but the most common cause is a laceration of the gastro-intestinal tract. Sometimes a diffuse peritonitis results after trauma, the exact origin of which might not be discovered, even at autopsy. Weichsel (1911) reviewed ten such cases of traumatic 'cryptogenic' peritonitis. Later Scholl (1936) also observed, that obstructive ileus and peritonitis may follow a non-penetrating abdominal injury, even though no primary wound of the gut could be demonstrated. Guibal (1909) called attention to the fact that a mesenteric hæmatoma can produce the same effect. Harttung (1920) reported a case of peritonitis which resulted after a fall in which no perforation was found, but there were many enlarged, inflamed glands and he observed that perforation of one of the glands might have resulted in peritonitis.

In the case reported above, the light blue discoloration which was noted on the first day, was not present on admission into the King George Hospital, nor at the time of autopsy. As Stern (1945) emphasized that in spite of a severe injury to the abdominal organs, the abdominal wall may not show the slightest degree of trauma. The blunt impact by the broad palmyra leaf stem over the left iliac region has resulted in the contusion of the pelvic colon as was evidenced by thickened lesion noted at the time of autopsy. The hæmorrhage in the wall of the gut associated with contusion has caused a very suitable medium for the *Bact. coli* from the gut to grow and enable them to permeate into the peritoneal cavity through the devitalised area causing diffuse infectious peritonitis. It is not necesary as emphasized above that there should be a solution of the continuity of the gut for causing peritonitis; a mere contusion of the wall of the intestine is enough for the escape of bacilli from the bowel as in the case reported above.

Medicolegal Aspect

The medicolegal question that arises in this case is whether there is sufficient medical evidence to establish the causal relationship between the blow inflicted on the abdomen and the peritonitis. According to Stern (1945) for such a study it is necessary, "(1) to know the condition of the organ in question before or at least immediately after the accident, (2) to determine the adequacy of the trauma, and (3) to observe the development of the disease accurately," and to these above, may be added, (4) a complete autopsy in the event of death. If the above conditions are fulfilled, the medical practitioner will be in a position to render conclusive testimony. In practice, however, all these conditions can seldom be satisfied. Firstly, in the case reported above, from the available evidence the deceased was perfectly healthy prior to the assault and was not suffering from any symptoms. However, it must be borne in mind that cases with definite heart, lung or kidney pathology can feel perfectly well and carry on their ordinary work for years. Besides the mucous membrane of the intestine even at autopsy was found to be healthy and not ulcerated showing that the deceased was healthy prior to the assault.

Secondly, was the trauma adequate in resulting in injury to the pelvic colon? In the above case a light blue discoloration was noticed by the Medical Officer on the second-day after assault and this proves that a blow has been inflicted on the abdomen. Whether the blow was of sufficient force to cause the injury to the colon it is impossible to estimate as the experimental work on animals and autoptic finding have conclusively proved that trauma may cause severe injuries to internal organs without any traces being found on the skin.

Thirdly, there was no long 'interval' between assault and the development of symptoms, but a continuity between assault and the development of peritonitis which ran a typical course.

Fourthly, the autoptic findings like the contusion of the pelvic colon and absence of any ulceration of the intestinal tract also clearly indicate the relationship between trauma and disease.

From the above it can be concluded that the deceased died of peritonitis as a result of non-penetrating trauma to the abdomen by the broad stem of the palmyra leaf.

Summary

A case of diffuse infectious peritonitis due to *Bact. coli* infection as a result of non-penetrating trauma to the abdomen in which no perforation could be found in the intestinal tract is described and the medicolegal considerations are also briefly discussed.

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SPECIAL ARTICLES

I

NEED FOR RESEARCH IN SYSTEMS OF INDIAN PHILOSOPHY AND AYURVEDA WITH SPECIAL REFERENCE TO PSYCHOLOGICAL MEDICINE

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INTRODUCTORY

This memorandum has been written in response to the kind invitation extended to me by the Committee on Indigenous Systems of Medicine, appointed by the Ministry of Health, Government of India, and presided over by Sir R. N. Chopra.

A few words of explanation are necessary at the outset, to explain why, I, who do not know Ayurveda, and with several other limitations, have still responded to this invitation. I must also make it very clear, that modern medicine, which is rational, scientific, progressive, and whose conclusions can be verified and modified, by experiment, and clinical observation, can never be supplanted by any other systems of medicine. But the inherent wisdom in Ayurveda, can certainly fill up many gaps in modern medicine.

The philosophy of medicine has received little attention until recently. And in psychological medicine, the present position is such, that, in spite of an accumulation of facts, attempts at integrating them into a scientific discipline have been very successful. And the speculation of psycho-analysis, which makes such an attempt, are disappointing, and often are only a matter of faith.

Specific treatment for mental disorder (psychoses and psycho-neuroses) is unknown. The recent advances, as illustrated by shock therapy, and the various operations on the brain, have been merely triumphs of empiricism. And a new approach to the whole problem of treatment is necessary.

I have been engaged for some time in the study of Indian philosophical systems (Darsanas), and the theory of Ayurveda, in some of its essentials, has been derived from the Nyaya and the Vaiseshika Schools of Philosophy. And during my studies, I have been profoundly impressed with the analytical insight and powers of observations of the ancient Sages of India. Specially to be noticed in their writings, is their emphasis on the psycho-somatic concept in medicine and philosophy, and the manner in which problems of personality, which forms the subject matter of psychological medicine, are dealt with by them.

It is my conviction that at the moment, India is in a singularly favourable position, to lead the world in psychological medicine. This it cannot do, by trying to emulate the West in their experimental, or technical achievements. But it can do so, by offering the world, a coherent system of interpretative psychiatry, which it lacks at present. And this can be realised, only if competent scholars are forthcoming to study intensively, but with an entirely different orientation, and with aims and objects totally different to what they have been accustomed to so far, the classic works in original of the different Schools of Indian Philosophy (Darsanas) and Ayurveda. The new orientation should be objective, and the aim should be to build from a mass of apparently unrelated disconnected, and indifferently understood bundle of facts, ia new discipline, a new system of scientific interpretative psychiatry.

Such an intensive study will also throw light on the psychological problems peculiar to India, and their treatment. So far we have had to depend upon the observations of European and American psychiatrists, on European and American patients, for guidance in treatment of Indian patients. These observations, have often been found inapplicable, and dangerous, in practice on Indians. Also, there is not a single authoritative text book written by an Indian, on psychiatry.

It is high time that such conditions were remedied, that we came to rely on our own observations, and drew our own conclusions from such observations on Indian patients.

These remarks, I believe, are sufficiently explanatory, as to why, in spite of my many limitations, I have responded to the invitation by the Committee to write this memorandum.

As regards the paper itself, after a preliminary survey of the basic problems in psychological medicine, and the lack of integration therein, and the unsatisfactory nature of psycho-analytic explanations, I have tried to show in some detail, how an intensive reorientated study of classical Sanskrit Darsanas, Ayurveda, and allied subjects, can help in building up a scientific system of interpretative psychiatry.

BASIC PROBLEMS OF MODERN PSYCHOLOGICAL MEDICINE

It must be remembered that in spite of many advances, we are still at the descriptive level in psychological medicine. The various types of reactions designated as mental disorders, are comparable only to syndromes in general medicine. They are not diseases in the sense that their etiology, pathology, clinical course, and treatment have been clearly understood. This difficulty in psychiatry arises chiefly from the facts that unlike in general medicine, the same group of stimuli can produce different types of reaction in different individuals. While undoubtedly, psychological stresses can produce mental illness, the biochemical factors are equally important. Hereditary factors, however, though important, are over-rated, and the salutory effects of training and environment are not sufficiently appreciated.

While discussing the importance of psychological stresses in the development of mental disorder, it has also not been sufficiently stressed that there is usually a period after such a shock, which corresponds to the incubation period in infective diseases, and which must elapse before the mental illness becomes manifest, and if this factor is overlooked, others may be given undue

preeminence. Another bewildering element in psychological medicine, is the simultaneous presence in mental patients of two varieties of reaction, one of which might be termed cortical, and the other nuclear. Investigation of these problems in India is a matter of urgency.

Dramatic success attained by methods of physical treatment, such as those effected by chemically induced convulsions, and by the surgical division of the white matter in the frontal lobes, have been triumphs only of empiricism. As Henderson and Gillespie put it, they seem to be often based on reasoning that paradoxically appears the more faulty, the more their practical successes are examined. Before arriving at a diagnosis one should of necessity take into account all factors, both cross-sectional and longitudinal. And no method of investigation, psychological, physical, pathological, or biochemical should be neglected. And in India, the organic factor, statistically speaking, is perhaps more important than the purely psychological.

Functions of the Brain

The study of the functions of the brain is confronted by a problem that is unique, and of great difficulty. In every other tissue and organs, except brain and bone, function and metabolism can be correlated. The brain silent and motionless, traffics with the imponderable (Fearon). Structurally speaking there is no difference between the brain of a genius and that of an average man. And biochemically, slices of both their brains utilise the same amounts of oxygen, glucose and other chemicals. The bone also has its own unique problems, which however, need not detain us here.

In the case of other tissues, intensity of function will be in proportion to energy produced or heat liberated as in the case of muscles, or will be in proportion to the osmotic pressure generated, as in the case of the kidney or the other glands.

But that is not so in the case of the brain. And there is no known physical method of gauging its functions; psychological methods are unsatisfactory, and fundamental work is required. There was some hope that the methods available for measuring oxidation reduction potentials, now being used for purposes of determining tissue respiration, would throw some light on the subject, but they have not been realised.

Electro-encephalography has so far thrown no light on problems of mental functioning, either normal or abnormal. A new approach is essential, and fundamental research, theoretical and practical is awaited. And if such an approach is even but glimpsed by an intensive study of Sanskrit systems, it will mean a great future for world psychiatry.

Approach to the Problem of Personality

The world owes a debt of gratitude to Freud for demonstrating that (1) mental illness can be caused by purely situational or psychological factors; (2) that symptom formation in such illnesses is not always due to conscious processes; (3) that speech and language can be utilised as powerful therapeutic aids; and (4) that the analytical method can be applied not only to patients but also to all phenomena of human life. From such an analysis an insight into the customs, traditions, dreams, pictures and poems of a nation is obtained, especially into the unconscious motives and mechanisms which produced them. Freud also discovered the technique (free association) for relieving distress of psychological origin. He demonstrated that all surface materials were related to sub-surface materials by complicated and consecutive links operating according to principles that could be definitely stated and related. He affirmed the law of psychic determinism that nothing psychological happens by chance but only as the result of a number of existing factors and forces operating in a causal chain. A slip of the tongue on occasional fancy, even the apparent nonsense of dreams at night, all according to him have definite meaning. His work and writings are equally that of a great poet as of a great scientist. He had a breadth of vision and great understanding of human nature. In his writings, the words are arranged to produce the maximum effect, and can rarely be improved. He had, besides, one virtue of a great scientist, namely the courage of conviction to confess when he was wrong.

In spite of all these great qualities, his method is but only one method of approach to the problems of personality and it certainly is not perfect. Many basic teachings of Freud are no doubt applicable to all the members of the human race. But the customs, traditions and civilisation of India and the East are so different from those of the West that another method of approach is not only valid but necessary. Some time ago while editing the chapter on Mental Diseases of the Bhore Committee report, I defined "Positive mental health as discriminative self-restraint associated with consideration for others." It was my impression at the time that it was a very original definition. Subsequently while reading Shankara's Vivekachudamani the first verse defines Viveka as discrimination, and continues to include in it much more than more people could have foreseen or expressed.

Many psychological doctrines and results of modern research have been anticipated and commented upon with great insight by ancient sages of India. They have stated categorically that in the ultimate analysis, selfishness on the psychological side and starvation on the physical are responsible for disorganisation in the individual and society alike. This fact stands as true to day as it was enunciated centuries ago and forms a pivot around which psychology revolves. But to the ancient sages the problems of personality and of mind, as we understand it, were only aspects of the general problem of ultimate reality and were treated as such. Hence the impression that Indian psychology is subjective, mystic and philosophical. But there is nothing to prevent students of modern psychology to study it in a purely objective manner, which under present conditions is imperative. Such a study is sure to furnish valuable approaches to the problems of the functioning of the human mind in general and that of psychological medicine in particular.

AIMS AND OBJECTS—SUGGESTIONS FOR RESEARCH

Certain objectives of study should however be kept prominently in mind, lest it become pedantic, discursive, metaphysical, and aimless. The most helpful research would be that directed towards the elucidation of problems relating to (1) the psychosomatic concept in medicine; (2) mental mechanisms, and interpretative psychiatry; (3) personality, its alteration in diseases; (4) mental hygiene; (5) postulation of concepts on the functions of the brain and nervous system, which should be capable of verification by experiment and observation; (6) treatment of neuro-psychiatric illness, by psychological and physical methods.

The whole system of Ayurvedic is based on the psycho-somatic concept in medicine. It is a matter for admiration, that without the aid of a microscope, without any modern instrument, with but primitive knowledge, from present day standards, of the basic sciences of physics, and chemistry, with only their intuition, and their clinical observations to guide them, our ancestors should have built up a well integrated system of medicine. This also explains in part, why ayurveda should be so one sided in its development, and its indebtedness to philosophy. Modern medicine is now beginning to appreciate the usefulness of the psychosomatic concept of health and disease.

Hughlings Jackson's concept of levels in the nervous system, their integration in health, and disorganisation in disease, is in a general manner anticipated by the Sankhya School of Philosophy (refer Sankhya Tattwa Kaumudi by Vachaspathi Misra). Problems of consciousness are dealt with in a penetratingly analytical manner in Mandukya, Chandogya, and Prasna Upanishads.

Taittiriya anticipated the importance of speech as a therapeutic aid centuries before Freud. Considerable similarity can be noticed between the Nirvikalpa theory of cognition and perception of the Nyaya School of Philosophy, and the recent Gestalt School of Psychology.

The Yoga sutras of Patanjali, the Yoga-Vasishta, the Mahabhashyas of Patanjali and Sankara, the commentaries on various Darsanas by Kumarila Bhatta Appaya Dikshitar, and Vachaspathi Misra, to mention only a few, are rich storehouses of learning for the student of psychological medicine. The Buddhist works on Philosophy are equally important, and are perhaps a little more objective in character.

The Yoga-Vasishta begins with a story, which possesses considerable psychological insight. A student went to the hermitage of sage Agastya, and asked him whether knowledge or work was the direct cause of peace of mind and of salvation. Agastya replied that as a bird flies with two wings, so a man attains peace only through knowledge and work.

Far surpassing all text books on Mental Hygiene are, the Santi Parva in Mahabharata, and the great Bhagawadgita, both of which concern themselves also with problems of conduct, whose solution is a pressing necessity for man, if he is to live without enmity, tumult and discord, which is attained only by mastery over self. They insist on meticulous discharge of social obligations, and teach equanimity, and balance of mind. Centuries later Osler gave his address on Equanimitas, which is now considered to be a medical classic.

Charaka gives us a scheme of life in which he traces the springs of all our actions to the three fundamental motives or biological instincts of life-preservation, worldly desire of acquiring riches for enjoyment, and other worldly aspirations of self-realization. According to him these three fundamental desires sum up all springs of action. On this view, will appears to be more fundamental than feeling or knowledge. Charaka does not seem to begin from the old and stereotyped idea that false knowledge is the starting-point of the world. His is a scheme of a well-balanced life which is guided by the harmonious play of these three fundamental desires and is directed by perfect wisdom and unerring judgment. Evil and mischief creep in through errors of judgment, by which the harmony of these desires is broken. All kinds of misdeeds are traced, not to feelings of attachment or antipathy, but to errors of judgment or foolishness (prajnaparadha). This prajnaparadha may be compared to the moha or avidya of the Nyaya and Yoga. But, while the Nyaya and Yoga seem to refer to this moha or avidya as a fundamental defect inherent in our mental constitution and determining its activities as a formative element, Charaka's prajnaparadha is not made to occupy any metaphysical status, but expresses itself only in the individul lapses of judgment. This sounds familiar to students of modern abnormal psychology, reminiscent of Freud, Adler and Jung, but formulated in a more acceptable manner by Charaka, at least a thousand years before them.

In the history of Science and Medicine, one observes that modern medicine has evolved naturally from Latin and Greek origins. Both Latin ad Greek cultures have been completely exploited during the process, and in that sense, Latin and Greek are considered to be outworn cultures, and the languages, dead languages.

On the same analogy, Sanskrit is said to be a dead language, and that nothing could be gained from its further intensive study. It is a false analogy, and a total misreading of history. Due to a break in ancient Indian civilisation, because of Mohammedan invasion of India, and subsequent British conquest, there has been no natural evolution of Indian culture, science or medicine, from ancient Sanskrit culture. The knowledge laboriously gathered by our ancients, is still there to benefit any one who seeks for it. In that sense Sanskrit is not a dead language, but very much alive. And if we have to maintain our dignity,

and self-respect as an independent nation, contributing to the culture of the world, an intensive study of Sanskrit, is essential.

And psychological medicine is still in its infancy and there is plenty of scope in it for intelligent speculation. This can only be achieved by an intensive research and application of Indian philosophical systems, in the original.

Summary

An attempt has been made in the above paragraphs, to emphasise (1) The comparatively undeveloped state of psychological medicine. In spite of many advances, the etiology, and pathology of mental disorder is not well understood, and hence the classification of mental diseases, is arbitrary, empirical, and often delightfully vague.

(2) Interpretative psychiatry, as practised at present, is not very satisfactory. Psycho-analytic theories which attempt to interpret signs and symptoms of mental disorder, are often an excessive strain on one's credulity. And at the moment there is no other theory, offering an alternative explanation.

(3) Specific treatment for functional mental disorder (psychoses and psycho-neuroses) is unknown.

(4) Intensive research in systems of Indian Philosophy (Darsanas), Ayurveda, and allied subjects, may provide

(*i*) A scientific terminology, and a sequential explanation of mental mchanisms, leading to a more scientifically acceptable interpretative psychiatry, and of the various problems of personality.

(*ii*) An acceptable programme of mental hygiene for individuals, groups, and nations.

(*iii*) Because of interpolated, irrelevant, and often apocryphal material, which detract from the value of the texts, strict examination of the original Sanskrit texts is essential, to purge them of such material. It is a task for competent scholars.

(*iv*) I have laid more stress on research in Indian philosophy, and not merely in the narrow field of Ayurveda for the following reasons: (*a*) Ayurveda is based on it, and the Darsanas can be exploited with better advantage, (*b*) Ayurveda however eminent as a system, a thousand years ago, is in many respects outmoded because of recent advances in the basic sciences, technical advances and experimental knowledge brought about with the help of various instruments, (*c*) Ayurvedic pharmacology is submerged in general pharmacology, and research in it is research in pharmacology, (*d*) for psychological medicine, philosophy is as important, if not more than Ayurveda, (*e*) I am however, open to the conviction that research in Ayurveda will provide newer methods of treatment of mental disorder, as well as of other diseases.

(*v*) Lastly, it must be emphasised that all research undertaken in this field, will be of great historical importance as unravelling a glorious period in the history of medicine.

Conclusion

At attempt has been made in the above pages to point out the need for research in Indian philosophy, and Ayurveda, in the original Sanskrit texts, with special reference to psychological medicine. It is hoped that from such a research may be found a coherent explanation of disconnected mental phenomena, and psychiatry may evolve into a scientific discipline. I have refrained from being unnecessarily technical, partly because of lack of knowledge, but as well because this is not a monograph, but only a memorandum presented to a committee engaged in determining the value of an ancient system of medicine, in a modern world.

II

RURAL MEDICAL RELIEF*

J. H. KUMBHANI, M.B.B.S., D.T.M., F.C.P.S.,
Chief Medical Officer, Jetpur State, Jetpur

Since 1917, I have been in close touch with the patients in rural areas and specially during the last 20 years I have worked in one of the most backward areas in the Bombay Presidency in Baria State which is surrounded by the Panch-Mahals district and other States of Gujarat and Central India, a part inhabited mostly by Bhills and Kolis, who are backward in every sphere of life. We all know well that uptil now very little attention has been paid for medical relief in villages and practically no steps are taken as preventive measures except against small-pox and against cholera when there is actually an outbreak of epidemic.

The Government of Bomby have started rural centres for medical relief for the last few years by subsidizing medical practitioners who would like to settle down in rural areas and we hear that last year the Government of Bombay have taken antimalaria measures on a large scale in two districts in the southern division and also that the Indian Union Government is going to take anti-malaria measures on the same scale destroying the mosquitoes and the larvæ by D.D.T. spray in the North of India to rehabilitate certain heavily infected places near the Himalayas. To-day we have persons amongst us who can use their influence in taking similar measures in ceratin forest areas in Gujarat and Kathiawar which are highly malarial.

It is very difficult for many villagers to get medical relief even though they badly require the same.

*Read at the Scientific Section of the 2nd Gujarat and Kathiawar Conference at Rajkot.

Only those who can afford to spend some money and to spare men go to the neighbouring places where they can get medical relief. The roads to villages are generally in a deplorable condition and hence it is very difficult and at times dangerous for the patients to be shifted as there are very few ambulance cars or stretchers provided by the Government or the Municipality.

The Government of the country ought to take serious measures to give prompt medical relief to every patient in every corner of the country and at the same time take prophylactic measures against diseases. As for medical relief, there could be medical centres so placed that no patient has to go more than two or three miles for primary relief. There is the difficulty of getting the necessary medical staff for all the places and from this point of view, I thought of giving some training to the teachers of the primary schools in Baria States a few years back and called 50 teachers from villages to the hospital for training for one month where they were given lectures in Gujarati and practical training in the hospital for giving first aid to the injured and giving primary medical relief to the patients suffering from common diseases and at the end each was given a medicine box. The teachers in villages are easily approachable and they have good influence over the village folk. The medicines were freely supplied whenever exhausted and the teachers were instructed to advise the patient whenever necessary to go to district dispensary nearby or to the hospital with a note to the medical staff which increases the confidence amongst the villagers that they would be well treated and immediate attention would be paid. The teachers were given monthly allowance at the end of the year, depending upon the work done individually by each of them. These village centres should also be educative from the point of view of public health and for this purpose magic-lanterns and slides should be provided between a few adjoining schools to be used in turn and that would be an entertainment too for the villagers. These village centres should be connected to a well equipped modern hospital with full staff, not more than ten miles from any village, for this area, there should be a health officer also an educative health propaganda at this centre should be by cinema films. There should be good all-weather roads connecting the villages to the centre to enable patients to be shifted to the Central Hospital in ambulances or motor cars, provided at the centre by the Government at normal charges.

Now I come to the more common diseases which form 90 per cent of the out-door patients. First and most common and at the same time most important from national point of view is Malaria.

Malaria—We all know what a great havoc malaria plays in India and we all know also the cause of the disease. Millions suffer every year and many die. Many suffer for a very long time specially in villages and the agricultural work is at times at a standstill when there is a severe outbreak. Once soon after my joining Baria State service I visited a small village only about three miles from Devgad Baria and examined 67 boys between the age of 10 and 20 and I found that in 48 cases the spleen was markedly enlarged and the boys were anæmic and emaciated with protruding abdomen. At another time I was called by villagers about ten miles away as nearly ten people died in two days in a small village and I found that it was malignant malaria. For this scourge, as I said before, the Government should take without delay preventive measures which may be costly in the beginning like D. D. T. spray over infected areas one after another. People should be made to understand that Malaria is carried by mosquitoes only and that if the cycle of infected person, mosquitoes and receiver is broken, no fresh cases of malaria will occur, I am sorry to say that even some educated people do not realize the fact that malaria is carried only by mosquitoes.

All anti-malaria measures aim at destroying the mosquitoes and their breeding places. The open drains that are hardly well-looked after, the pits on the sides of roads and railway tracks, the partially dried up river-beds after the floods, the unused wells, small collections of water near the house etc. are some of the main breeding places and these should be dealt with by the authorities concerned and the public should be educated by us all and the health authorities to co-operate with the authorities.

The village teachers or Patels in villages should be well provided with anti-malarial remedies either direct from the revenue of the village concerned or provided by the State.

Dysentery—Amœbic dysentery is endemic and very common in Gujarat and Kathiawar. I am satisfied with Kurchi in rural practice which can be used with Castor oil or Mag Sulph and can be safely given to other unqualified persons for administration to patients. It is an indigenous drug and I request other medical men to use it on a large scale. This disease is more common during rainy season and in villages where the people pass stools in open spaces and we all know that the disease is carried by human carriers and flies. To prevent the infection the public should to be educated to have the food and milk well protected against the flies carrying the infection. Amœbic dysentery leaves at times if not well treated, chronic dyspeptics and neurasthenics and hence persons should be well and fully treated in acute stage.

Conjunctivitis—Granular conjunctivitis is common throughout the east, specially Egypt, Arabia, Iran and India. There should be some arrangement for supplying eyedrops and ointments cheaply and the persons affected require instructions not to treat the disease lightly and at the same time should be made to understand that the disease is a contagious one.

Scabies and Ringworm are also common and it is easy to provide drugs for these through any agency to the masses and the public should be made to understand the cause of these diseases which are a great nuisance to the sufferers.

Tuberculosis—Day by day this disease is claiming more victims and requires more arrangements for treatment of the patient. There are practically very few special hospitals for the disease and sanatoria in Gujarat and Kathiawar and the Government should seriously consider this question. Patients have to go to a long distance for X'Ray film for confirmation of diagnosis in early cases. X'Ray charges for this disease should be moderate and should be supplied at every medical centre. The village centres should be instructed to advise any patient suffering from fever and cough for more than a month to go to the nearby centre.

Injuries—This is very common and the first aid should be provided early, for want of which many people are bed-ridden for a very long time due to sepsis.

Typhoid—This is getting common also. To prevent the spread of the disease, anti-typhoid inoculation should be made compulsory every year in all primary and secondary schools and colleges.

The rural medical relief can never be complete without a good supply of trained midwives and dais in every village. Luckily Kathiawar is not so backward. For the last two years efforts are being made by the Trustees of the Kasturba Fund to open up maternity centres in rural areas and to train up local midwives.

Every centre should be well provided with anti-cholera, anti-rabic and anti-tetanic remedies. One should not have to wait for anti-cholera vaccine till the epidemic starts. One should know why many medical men are not attracted to villages, even though the scope of practice may be good. The Indian doctors are as philanthropic as any others in the world. The civic amenities like the library, supply of newspapers, educational facilities for children, supply of good drinking water, electric supply, housing accommodation and future prospects attract the educated people more to the towns.

I am only giving the basis on which rural medical relief may be started. It should be compulsory on every cinema house to show at least one educative film in every show as approved by the health authorities. Common medicines should be freely available in every village. There ought to be arrangement for prompt medical relief in all emergency cases and in all maternity cases whether in towns or villages, however small they may be.

Now that the popular Government is there, the people have a right to expect that as much attention would be paid to the relief and improvement in villages as in towns or cities and proportionate amounts would be spent in the villages, which are the real backbone of India and whose voice has not been heard till now or rather who have not come forward demanding their share in education, medical relief, good roads and other public utility concerned.

CASE NOTES

A CASE OF SCURVY

A. J. KHAN, M.B., B.S.,
Medical Officer,
Central Government Hospital, Karachi.

Patient, Nek Mohd.,—aged 20 years, Mahomedan, non-vegetarian of simple habits and of limited means was admitted on the 8th February, 1948 in the Central Pakistan Hospital with the following complaints:—

(1) Profuse bleeding from the gums since 5-2-48.

(2) Weakness and lassitude since one month.

(3) Dizziness on standing since one week.

(4) Constipation on and off since 1½ months.

(5) Vague limb pains.

Family History—Of no importance.

Personal and Past History—He is a young boy of 20 years of sedentary habits and does not know of having suffered from any disease in the past. Was very fond of taking dried vegetables. Lived in Purana Qila for two weeks in September, 1947 and later on came to Karachi.

History of present illness—One month ago sometime in January, 1948, the patient had an attack of malaria; was treated by a local practitioner and became alright; remained well for about four days; again had an attack of fever with rigor; was treated by the same doctor for about ten days but got no improvement. During this time he started getting swelling of the gums especially around teeth. He then consulted another doctor who treated him for two days for malaria when he suddenly started getting bleeding from the gums which later on became profuse; was admitted to the Central Government Hospital on 8th February, 1948, in a state of collapse. Prior to admission the same doctor treated him by calcium gluconate injections but to no purpose.

Present condition—The patient is a young man of twenty years. He looked very ill, felt dizziness on standing and complained of shortness of breath. He also got vague pains in the lower limbs, in fact, aches and pains all over the body. He was anæmic and very weak. He also complained of blood in urine. There was slight œdema over feet.

Systemic Examination—Pulse 140 per minute. Respiration 30 per minute and temperature 100° F.

Alimentary System—

Teeth dirty, gums unhealthy, swollen and there was sponginess of the alveolar margin.

Tongue—Swollen; salivary glands enlarged. There was oozing and foul smell from the mouth. Gums bled on slight provocation.

Tonsils—Nothing abnormal.

Spleen and Liver—Not palpable.

Other systems were all normal.

Laboratory Examination—

BLOOD PICTURE

Date	*Total R.B.C.*	*Total W.B.C.*	*Hb. %*	*C.I.*	*Differential Count* Poly	Lympho	Mono	Eosino	*Remarks*
9-2-48	1,000,000	9,500	20	1	70	26	2	2	
11-2-48	1,000,000	3,500	20	1	57	38	4	1	Poikilocytes, anisocytes, normoblasts present. Blood platelets —40,500 per c.mm.
16-2-48	1,560,000	4,000	33	1	62	33	3	2	
25-2-48	2,500,000	4,500	50	1	40	54	2	4	
3-3-48	3,000,000	4,000	58	..	48	46	3	3	
10-3-48	3,520,000	7,000	78	..	60	37	3	0	

9-2-48

URINE EXAMINATION:—Reaction—Acid. Sp. gr.—1015. Sugar—Nil. Albumin—+. Deposit—RBC + +

STOOLS EXAMINATION:—Nothing abnormal found.

11-2-48

URINE EXAMINATION:—Reaction—Acid. Sp. gr.—1018. Sugar—Nil. Bile Salts—Nil. Bile Pigments—Nil. Albumin—Traces. Deposits—RBC + +.

3-3-48 & 10-3-48

URINE EXAMINATION:—Nothing abnormal found.

DIAGNOSIS AND DISCUSSION

This diagnosis was arrived at by excluding the various possibilities. The conditions which came to one's mind at the very outset were scurvy, purpura hæmorrhagica and acute leukæmias. In purpura hæmorrhagica the affection of the gums is absent and the hæmorrhages have not as they have in scurvy, an inflammatory character. The possibility of acute lymphatic leukæmia was given up because of the absence of marked ulceration in the mouth and above all the examination of the blood which is always typical in leukæmias. I have purposely avoided other blood conditions because of very pronounced symptoms and signs pointing towards scurvy. In probing deep into the history I discovered that the patient was not having a very balanced diet for sometime past before the partition of India as he was supporting a big family and when the partition took place he remained in the Purana Qila Camp for more than two weeks and when he reached Karachi he could not very well set himself up. The stresses of modern living—the tensions and anxieties that frequently accompany them proved the last straw that broke the camel's back and culminated in this major disaster for him—scurvy, giving rise to big hæmorrhage from the gums. The response to ascorbic acid left us in no doubt as to the authenticity of the disease.

TREATMENT

From the very start we tried calcium lactate 15 grains by mouth, calcium gluconate 10 c.c. 10 per cent I.V. once a day, Coagulen (Ciba), hæmostatic serum and vitamin K. but there was no improvement worth the name. The hæmorrhage continued unabated. He was then on the 9th February put on ascorbic acid tablets 3 every 6 hours and liver extract 2 c.c. once a day. On the 11th February, 1948, he showed some improvement. But as he was looking very anæmic, I gave him blood transfusion (16 ozs. of blood) and he was put on the following routine:—

(1) Mist. iron tonic one ounce, twice daily after food.

(2) Redoxon 2 c.c. (100 mg.) I.M. twice a day.

(3) Vitamin K. 1 c.c. once a day for 2 days only.

(4) Ascorbic acid tablets (3) T.D.S.

Local Treatment—(1) Mouth was cleaned with hydrogen peroxide. (2) Silver nitrate 2 per cent solution applied to the gums.

Later on I stopped vitamin K. on the 15th February, 1948, and made injection of Redoxon ampoules 2 c.c. once a day. In the meanwhile he started getting malaria which was controlled by Paludrine.

Besides the above I put him on fresh juice of oranges, lemons and tomatoes every 2 hours. The hæmorrhage was completely controlled and he made an uneventful recovery within a week. He was discharged on the 10th March, 1948, as completely cured.

ACKNOWLEDGMENT

My grateful thanks are due to Lt.-Col. M. H. Shah, Chief Medical Officer of the Central Government Hospital for his valuable suggestions and permission to publish this case.

INTESTINAL OBSTRUCTION TREATED WITHOUT OPERATION

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Kharsia, C.P.

A Hindu female, aged about 28 years was admitted to this hospital on 17-4-48 for complaints of absolute constipation and anuria.

History of the case was that on 15-4-48 she felt acute pain in her abdomen at about 10 o'clock in the morning followed by passage of a little blood stained mucus. Since then she passed no stool or flatus and her abdomen gradually became distended and she was having a constant pain in her abdomen. She passed no urine since the evening of 16-4-48 and was brought to the hospital at about 12 noon on 17-4-48.

On examination—She was a woman of average constitution with a pinched look, tongue dry and coated slightly in the centre, no marked anæmia, respiration quick and shallow, pulse quick with low tension and of fairly good volume, heart and lungs n.a.d. Abdomen rigid and distended, the distension was more marked in the upper part of the abdomen and had a distinct longer transverse axis. Abdomen was tender all over and markedly tympanitic in the upper part. Thorough palpation was not possible due to the rigidity and pain and no mass was palpable. The rigidity of the upper part of the abdomen was getting more marked at intervals showing the peristaltic movements. No marked distension of the bladder was detected.

DIAGNOSIS

A provisional diagnosis of intestinal obstruction was made and the patient was advised to go to a hospital with better facilities for surgical intervention. Her relatives expressed their inability to do so. So she was admitted to see if simple methods would succeed.

TREATMENT

The patient was put to bed and about 4 ozs. of urine was drawn out with a rubber catheter. A flatus tube was then passed without any benefit. Then a low soap water enema was cautiously given. The enema was returned unaltered. No gas or fæcal matter came with it, nor it had any effect on the symptoms of the patient. The gravity of the case was again fully explained to the patient and the request to take her to a bigger hospital was repeated. But I was told that if nothing could be done here they would better take the patient home and leave her to her fate. Under the circumstances I considered that I would be justified in taking more risk. 25 c.c. of 25 per cent glucose was given intravenously and 1/100 gr. atropine was injected. After about half an hour a thick walled sterilised rubber tube about 6 ft. long with a rounded end was cautiously passed per rectum with uniform pressure. An obstruction was encountered when the tube was about 4 ft. in. It was fixed in that position with a piece of elastoplast so that a steady slight upward pressure was maintained and left in that condition for about half an hour more when the attempt to introduce it was resumed. With a little pressure the tube went further in and a mixture of gas and liquid fæcal matter came out of the tube. About 6 pints of the matter was drawn out by manipulating the tube and changing the position of the patient. The tube was passed further up to its whole length and drawn in and out as if in an attempt to iron off the obstruction and the tube was then withdrawn. The distension was completely gone. A dose of liquid paraffin was given to soothe the intestinal wall and help further evacuation. The patient had small liquid motions throughout the whole night and felt almost all right except for a slight rise of temperature and a tender spot on the colon which I presume was the site of obstruction. She was put on a carminative mixture for another 2 days and was discharged cured on 20-4-48.

DISCUSSION

That the case was one of intestinal obstruction is obvious, but the nature of the obstruction has not been established. The obstruction was naturally not a very strong one. Was it a kinking of the gut or can it be a loose intussuseption? According to text books on surgery laparotomy at the earliest opportunity gives the best chance of recovery to a patient of intestinal obstruction. This case recovered without operation and in a shorter time too. The risk of passing the tube is obvious. It may be justified in this case, but considering the easy and quick recovery of the patient will it be justified in other cases too? If so, in which cases may it be tried?

ACKNOWLEDGMENT

My thanks are due to Rai Bahadur Dr. M. L. Chatterjeee, Civil Surgeon, Raigarh, for his kind permission to publish this case.

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CALCUTTA, MAY, 1949

QUO VADIS

The Health Survey and Development Committee popularly known as Bhore Committee, envisaged the organisation of a national health service. In the recommendations it suggested the establishment of primary, secondary and district health centres.

The different provincial governments took up the recommendations after August 15, 1947. Naturally the details had to be altered to suit local conditions. The West Bengal Government decided in June, 1948, to take up the work of starting Union Board and Thana Health Centres. Some appointments were also made for administrative purposes. They were to select sites as well as to consider the facility of starting the centres in those places. There was also a scheme to provide for improvement of some of the sub-divisional hospitals.

The West Bengal Government intended to start in 1948 nearly 641 Union Boards Health Centres with 4 beds in each centre and about 60 Thana Centres with at least 50 beds in each of them. These would start in purely village areas. The total cost estimated under this village scheme was about 2 crores 20 lakhs and work in this connection was expected to start by September, 1948.

This scheme was welcomed by the inhabitants of malaria infected West Bengal. A large number of people came forward and money was received from various villages to open centres in their areas. The Government raised about 8 lacs of rupees from private sources and another 16 lacs were promised from whole of West Bengal for opening of Union Board Centres.

It was decided that the doctors in charge of centres besides attending the outdoor patients in clinics and treating indoor patients would also take full share in other forms of public health activity, namely, arrangement for disposal of sewage, looking after the health of children, conducting maternity and child welfare clinics. We understand that Government advertised for some doctors and the authorities interviewed applicants and selections were also made. Most of the doctors have not yet got their appointments.

The reason is not far to seek. In the 'Amrita Bazar Patrika' of 23.3.49—mofussil edition—the following appeared in the "By the Way" column—"Although the West Bengal Government promised to open 200 Health Centres during the current financial year (1948-49) only two such centres could be opened . . . . As a result the Government had to surrender about a crore and a half rupees to the Government of India."

One is fully aware about the shortage of building materials, difficulties of transport, etc., in these days. But the progress made during the whole year reflects on the efficiency of the department concerned. West Bengal pays heavily with lives of her children every year from malaria, typhoid fever, cholera and tuberculosis. Are we going to hear the same sort of excuses two years after independence? We understand that one special officer was appointed to look after this scheme successfully. The results speak for his efforts.

The country is sick of speeches, tall talks, and committees and their schemes. What is needed now is action not words. Independent India wants people who are alert and active, alive to their duty and sympathetic towards suffering humanity. Indifference, apathy and lethargy cannot be tolerated any more.

If suffering humanity cannot get the desired relief, highly paid officers of the state have no justification to continue with their inefficiency but should hand over responsibility to abler, energetic persons with wider vision and sympathetic outlook.

CURRENT TOPICS

SCOPE AND FUNCTIONS OF THE CENTRAL DRUGS RESEARCH INSTITUTE

The following is the lecture on the scope and functions of the Central Drug Research Institute, delivered by Dr. Jivraj N. Mehta, Chairman, Drugs and Pharmaceuticals Committee, Council of Scientific and Industrial Research, on 4-4-1949 at the Chattar Manzil Palace, Lucknow:

One of the primary responsibilities of any civilised Government is to organise methods by which 'the nation can be kept fit.' This means, among other things, the provision of food and medical aid to the population. In any scheme of medical relief to the nation, drugs, which are the chief weapons in our attack against mal-nutrition, diseases and epidemics, would naturally form an important item for consideration. Next to the supply of food, the provision of drugs of good and dependable quality, at a price within the reach of the poorest masses of India is an urgent and imperative necessity. The question of drug supply is again intimately related with drug research on scientific lines, as only on the basis of up-to-date scientific knowledge, the medical profession would be able to utilise, to the maximum, the abundant sources of drugs that exist in this country. It is quite clear to-day that without research, the drug industry in India cannot be improved and brought to the level of that existing in foreign countries. India to-day is still very largely an importing country in the matter of her present-day medical and surgical needs—spending from 3 to 4 crores each year on such imports—and it has been felt for a long time that attempts should be made to establish a national institute for drug research, so that various enquiries in this direction could be studied and met. It is a pleasure to state that after all, this objective has now been fulfilled and we are able to initiate the establishment of a Central Drug Research Institute at Lucknow; thanks to the generosity of U. P. Government in handing over this imposing and historical building—Chattar Manzil Palace—with its spacious grounds to the Council of Scientific and Industrial Research for the purpose.

A fair amount of research on indigenous drugs has been carried out in India during the last 30 years under the auspices of the Indian Research Fund Association and in such institutions as the School of Tropical Medicine, Calcutta, the Central Drugs Laboratory, Calcutta, the Haffkine Institute, Bombay, the Indian Institute of Science, Bangalore, the Central Research Institute, Kasauli, the Chemical Laboratories of the various Indian Universities, some medical colleges and lately under the auspices of the Council of Scientific and Industrial Research. These investigations, which have yielded valuable results, have indicated also the need for a central organisation for carrying on intensive research on drugs and for providing facilities for work between pure science and applied science and also between scientists and industrialists engaged in drug manufacture. Unlike researches in other fields of science, drug research is essentially a collaborative research between botanists, agriculturists, chemists, pharmacologists, microbiologists and clinicians. There are very few, if any, individual workers who possess all the technical skill and the theoretical information required for the development of the whole field of drug and pharmaceutical research. This fact was realised in Germany in the first decade of this century and the German scientists were the first to develop drug research by this method of collaborative work. Later, the same method of collaborative research has been adopted in countries such as Great Britain, Switzerland and America, with the result that some phenomenal discoveries (discovery of anti-malarials, *e.g.* Plasmochin, Atebrin, Paludrine; discovery of anti-bacterials *e.g.* Sulpha drugs; discovery of insecticides, *e.g.* D.D.T. and Gammexane; discovery of anti-biotics, *e.g.* Penicillin and Streptomycin, etc.) have been made in the field of therapeutics during the last 15 years, which was not possible in over 3,000 years, *i.e.* from 1500 B.C. to 1900 A.D. One of the major factors which has been responsible for the present unsatisfactory position of drug research and drug industry in India is this lack of collaborative work betweeen different groups of scientists and between the various scientific groups of workers within the industries. The Central Drug Research Institute will be the first Institute of its kind, where this collaborative work would be brought in towards the development of drug resources of this country.

Planning of Central Drugs Research Institute

The Drugs and Pharmaceuticals Committee of the Board of Scientific and Industrial Research considered this question in all its aspects over three years ago. At my request as Chairman of the Drugs and Pharmaceutical Committeee, a detailed scheme for a Central Institute for Drug Research was submitted by Dr. B. Mukherjee, Director, Central Drugs Laboratory, Ministry of Health, Calcutta to whom I should like to express my warm thanks for the preliminary work he did in this connection, and this formed the basis of discussion at several meetings of the Committee. When the scheme received the approval of the Drugs and Pharmaceuticals Committee, it was considered by the Board at its 19th meeting held in August, 1947 and the plan for the establishment of a Central Drug Research Institute was generally approved. There were however further consultations with the Director, Scientific and Industrial Research so as to bring it in line with similar institutions, *viz.*, National Chemical Laboratory, National Physical Laboratory, etc., already started under the Council of Scientific and Industrial Research. The final plan so revised was accepted by the Board at its meeting held on February 5, 1948, and ultimately approved by the Council of Scientific and Industrial Research at its meeting held on 6-2-1948.

The Scope of Work

The scope for research in drugs and pharmaceuticals in India is wide—ranging from systematic

study of the crude drugs used in indigenous systems of medicine to the highly developed field of synthetics and anti-biotics. Nearly 75 per cent of the vegetable drugs listed in the British Pharmacopoeia are native to India and substitutes for a large number of others can be found among the rich and varied resources in this country. These resources have not been exhaustively explored or exploited. Researches in the fields of synthetics and anti-biotics will have to be intensified, but in the immediate future special stress will have to be laid on the *natural drugs*.

The Functions

The functions of the Institute will be:

1. Promotion of drug research in general, including botanical (pharmacognostical), chemical, pharmaceutical, pharmacological (standardisation, chemotherapy and toxicological, bacteriological, microbiological and clinical aspects.

2. Testing and standardisation of drugs according to approved methods and giving expert opinion thereon as a guide for further research, development and production. The Institute will naturally confine itself in this regard to testing and standardization in so far as they relate to the work of the Institute.

3. Offering facilities to and helping scientists in universities, special institutions, industrial concerns and others who may not be in a position to carry out investigations by themselves.

4. Providing controlled clinical trials in hospitals, clinics, etc., and

5. Dissemination of scientific knowledge and statistical information relating to drugs.

The ultimate object of the Institute would be to stimulate progress in the control and treatment of disease through facilitating investigations to establish the usefulness and limitations of diagnostic, preventive and therapeutic agents. This will involve not only the promotion of critical clinical investigations of new therapeutic agents but also the consideration of possible new uses for the old one according to varying factors.

The Organisation of the Institute

The Institute will consist of a number of chief divisions to begin with—(1) Division of Chemistry, (2) Division of Pharmacology, (3) Division of Biochemistry and Micro-biology, (4) Division of Clinical Science, and (5) Division of Pharmaceutical Botany and Pharmacognosy. It has been recently decided at the January meeting of the Drugs and Pharmaceuticals Committee that it may be necessary to have a fifth division from the very beginning—Division of Pharmaceutical Botany and Pharmacognosy, which was otherwise formerly decided to be placed under the Division of Chemistry. In addition, there will be (*i*) a Central Library, (*ii*) an Information Service and (*iii*) a workshop for fabrication of instruments, special glass apparatus and pilot plants.

The work of the various divisions would be under the overall supervision and guidance of a Director, who may be a specialist in any of the branches comprising the divisions of the Institute and who would have leadership to integrate and correlate the work of the various divisions. The Divisions will deal with the following subjects of special interest to them:

(1) *Division of Chemistry*: (*a*) Plant chemistry (indigenous drugs); (*b*) Pharmaceutical chemistry (pharmacy); (*c*) Synthetic chemistry; (*d*) Medicinal chemicals and replacement materials; (*e*) Analytical chemistry, including microchemical and ultimate analysis and (*f*) Physical chemistry (spectrography).

(2) *Division of Pharmacology:* (*a*) Toxicology; toxicological chemistry and pathology; (*b*) Pharmacodynamics, local and systematic; (*c*) Studies in absorption, distribution and excretion, and of detoxication; (*d*) Quantitative comparison with related agent, *viz.*, assay, standardization, therapeutic index determination; (*e*) Chemotherapy, prevention or combating experimental infections or action of toxins, etc.; (*f*) Antiseptics, disinfectants, insecticides and rodenticides; and (*g*) Experimental therapeutics, action and fate of drugs in normal human beings.

(3) *Division of Bio-chemistry and Micro-biology:*—(*a*) Biochemistry (including vitamins, enzymes, hormones); (*b*) Blood and blood substitutes; (*c*) Protein breakdown products; (*d*) Biologicals, including sera and vaccines, (*e*) Anti-biotics, and (*f*) Industrial microbiology and fermentation.

(4) *Division of Clinical Science:*—(*a*) Studies on ambulatory patients, determination of therapeutic efficacy; (*b*) Studies on hospitalised patients, clinical toxicity; (*c*) Trial of new medicinals in experimental stages; (*d*) Trial of new drugs; (e) Clinical dispensing, rural medical relief with suitable preparations of crude drugs; (*f*) Clinical trials of indigenous substitutes and replacement of already known drugs.

(5) *Division of Pharmaceutical Botany and Pharmacognosy:*—This division will provide for a complete survey of the natural drug resources of the country with the help of Botanical and Agricultural departments of various provinces and co-operation of suitable practitioners of different systems of Indian Medicine. It will have various sections, such as, (*a*) Pharmaceutical Botany, (*b*) Pharmacognosy, (*c*) Bureau of Plant Industry, (*d*) Drug Emporium, (*e*) Cultivation of drug plants not available at present in India.

Development of the Institute

The work of the Institute, as will be seen, has thus been planned on broad-based lines and it will take some time before the proper type of personnel are recruited and the various scientific equipment, etc. are got together. It is however hoped that by the end of this year, at least one of the sections (Division of Chemistry) would start functioning. As the scope and work of the Institute develop, all the Divisions may have to be split up into 2 or more sub-divisions, each with additional technical personnel. So far as the Division of Pharmaceutical Botany and Pharmacognosy is concerned, one of the important steps would be to promote the collection of standard drugs and the maintenance of an up-to-date herbarium and museum of medicinal plants, where authentically named specimens could be housed for consultation and comparison. Such a herbarium and museum would be helpful from many angles. Though some excellent herbaria already exist

in places such as, the Forest Research Institute Dehra Dun, the Botanical Survey of India, Calcutta, the Royal Botanic Gardens, Calcutta, the School of Tropical Medicine, Calcutta, etc., it will be necessary for the Central Drugs Research Institute to promote an independent establishment of drug herbarium, which should consist *only of medicinal plants*. This herbarium should be supplemented with an up-to-date museum containing the parts of plants *actually used in medicine* and in the form met with in the market. This herbarium and museum should be specially adapted for identification of specimens and for the education of those who are interested in the collection and utilisation of vegetable drugs.

One of the important lines of work of the Division of Chemistry would be researches on plant chemistry on the line that has already been successfully followed for some years by Sir Ram Nath Chopra at the School of Tropical Medicine, namely the isolation and working out the constitution of chemical constituents of plant products. There are, on a rough estimate, about 3000 reputed medicinal plants in this country, of which only about 70 to 75 have so far been worked up according to modern chemical methods. While no epoch-making discoveries have been recorded, there is definitely room for a much more extended work in this field. There is also need for a completely re-orientated method of approach in the field of plant chemistry through the use of the method of enzyme degradation of fresh plant materials, which have been successfully followed up by eminent Swiss workers such as Prof. Stoll, etc. A Division of Synthetic Chemistry would have to be independently set up probably in the near future, because modern synthetic chemistry is the forerunner of the large number of chemotherapeutic drugs, which are being daily evolved for the alleviation and treatment of bacterial and virus diseases.

The Division of Pharmacology will have to be given special emphasis, probably from the very outset, but this will depend on the availability of highly qualified and trained personnel. As drug industry is of comparatively recent origin in this country and as there were no openings for capable workers in this field, this branch of science has not developed to the same extent as the other sister branches already referred to. In research work pertaining to plant chemistry, quite often two to three pharmacologists are necessary for one capable chemical worker. This Division will also have to take care of various poisons occurring in food and fodder and work out their toxicology, with particular reference to conditions existing in this country. Therefore, before very long, a special section on 'toxicology' and another special section on 'biological standardization' will have to be developed as independent but integrated branches of this division. Similarly, the changes brought about by drugs on the tissues, both in normal and pathological conditions, will also have to be studied, as independent branches under this division.

The division of Biochemistry and Micro-biology will have to be organised on an independent and self-sufficient footing from the very beginning. The section on Micro-biology will develop gradually with the introduction of studies on sera and vaccines on protein breakdown products, on immunological preparations for virus diseases etc. If industrial micro-biology, particularly the fermentation products leading to the developments of various types of alcohol, gluconic acid and lactic acid are developed, this will also have to be treated as a more or less independent section with additional technical personnel and directing head.

Very little attention has so far been given on clinical research in this country. Most of the hospitals at present functioning are really, 'treatment hospitals' and not 'investigational hospitals'. The Central Drug Research Institute is planning to have clinical research in well equipped hospitals carried out from the very beginning by trained clinicians with a flare for research and who would be whole-time workers without private practice in this field. They will work in conjunction with several hospitals and clinics, where research Fellows would be posted for the collection of data and for any other help needed by the clinicians in the furtherance of any particular investigation. With this idea in view, the Institute has been located in Lucknow, where a Medical College with full library and clinical facilities exist, instead of at Allahabad where also the U.P. Government had offered an alternative site and structure for the Institute. The selection of Lucknow with its Medical College and teaching hospital to fall back upon for Scientific Drug Research throws an added responsibility on the staff of these institutions and I look forward to their responding generosity to this added responsibility thus placed on their shoulders; even at some sacrifice of their lucrative practice, if so necessary. The Division on Clinical Science would carry out studies on ambulatory patients as well as on hospitalised patients. Trials of new drugs will be undertaken under strictly controlled conditions and comparative therapeutic efficacy of many old and widely used remedies will also be conducted side by side with the more recent substitutes and equivalents thereof.

A word about the Central Library to be established at this place would not be out of place here. All information in the country on indigenous drugs should be available in this library, with particular reference to books on all systems of Indian Medicine in Sanskrit, Persian, Urdu, Hindi, Bengali and Dravidian languages as also in German, French and English. Close liaison would need to be maintained with other institutions working in similar direction, such as the one at Benares, Jamnagar and other parts of the country; translation of the University works into Hindi and English should be a speciality of this organisation.

Scientific investigations which are being undertaken at present need emphasis in that, while we concentrate on fundamental research, we should also encourage research on applied lines. The conversion to practical commercial use of every research which is sponsored financially, should be kept in mind and machinery set up consisting of scientists and manufacturers, for advice from this point of view. Likewise if we are to march forward quickly and efficiently in Drug Research the clinical and field trials of many

new preparations must be undertaken by the permanent and trained medical staff of a Central organisation to whom the liaison and guidance of the chemist and the pharmacologist should be available on the spot.

A word as to what place the Indian systems of medicine have in this Institution would not be put out of place here. It is for the scientist to see that any system of medicine practised in the country is 100 per cent scientific and it is the function of Government to ensure that scientific medicine only is practised in the country. The old system of medicine should therefore be thoroughly investigated and drugs sold in the market, and administered in any part of the country must be on the hall-mark of scientific testing by a Central Institute. But before the Institute can take up this problem, it will have to be well organised, which may take from five to ten years. When so organised and not before, the co-operation of practitioners of Indian systems of medicine should be sought along with workers in other branches of science to bring out what is best in these systems.

If the Institute is lucky in getting a Director of outstanding scientific ability and with a large amount of experience in the field of drug research, it is to be hoped that India would be able to contribute significantly in drug research during the next 30 years. Under the stimulating leadership of such a Director, a scheme for the training of scientific personnel in these particular fields of study will be launched before very long and in this way, a new line of activity will be developed for the trained and educated youths of this country. Contributions, both towards new knowledge and also for standardising old knowledge emanating from this Institute will also help a great deal in making India self-sufficient in the matter of her drug supply. The Institute will further take all steps to disseminate scientific and statistical knowledge, so that isolated research centres in the various parts of India could get inspiration and stimulate therefrom. I foresee a day before long when the Institute would develop itself into a virile and active centre for drug research, to which all scientific personnel from all over India would come for free exchange of ideas and views, thus making Lucknow the centre of knowledge regarding drugs from all aspects.

Though I have detailed at some length the scope and functions of the Central Drug Research Institute, I should not like an impression to go abroad that the Council of Scientific and Industrial Research wants to place all its eggs in this one basket. While concentrating on Drug Research from all aspects in one Central Institute, I would like to emphasise that the Council is also desirous of encouraging this work at the laboratories of various Universities and Medical Colleges as well as other organisations. The possibility of starting two or three pharmacological units in suitable medical centres, in the same way as the Indian Research Fund Association which is not happily to be known as Indian Council of Medical Research, has started 'Nutrition Units' in different centres in the country. Likewise would be assisted Drug Research in other laboratories. While we have made some headway in this country in Researches in Chemistry, Physics, Botany—only yesterday this city had the honour of having the foundation stone laid of the Institute of Paleo-botany at the hands of the Prime Minister; thanks to the generosity of Dr. Birbal Sahni and the co-operation of Government—and in some other sciences, the progress in Medical Research—particularly Clinical Research and Drug Research has been poor. Had it not been for the acumen and labours of Col. Ram Nath Chopra, Drug Research in India, would have put up the poorest show in the country. For the alleviation of human suffering and for the proper physical and mental development of our race it is essential that Drug Research as conceived in the early part of my address should be on as broad a basis as possible. Before I conclude, let me convey on behalf of myself and my colleagues on the Drugs and Pharmaceuticals Committee of the Board of Scientific and Industrial Research our warm thanks to the Hon'ble Premier Punditji and his colleagues for placing at our disposal this corner stone of the vast edifice of Drug Research which we would build throughout the country.

NOTES AND NEWS

ALL-INDIA CONFERENCE OF INDUSTRIAL MEDICINE

The Society for the Study of Industrial Medicine which was inaugurated in the Steel Town of India—Jamshedpur—on 19.7.1948 with 26 Founder Members has expended a great deal in the first year of its existence. The membership is open to all registered medical practitioners associated with industry. Now the Society's members are scattered all over the country and those members are endeavouring to fulfil the aims and objects of the Society which are:—

(*a*) Stimulation of enquiry and research into the causes, treatment and prevention of industrial diseases.

(*b*) Guidance of industry with regard to the problem of industrial medicine, hygiene on the modern scientific principles.

(*c*) To secure effective and complete organization of the medical officers in industry.

In addition to the Scientific Meeting held every month at Jamshedpur, Society's Quarterly Journal—Proceedings of the Society for the Study of Industrial Medicine—is available to all the members.

At the March meeting the Council of the Society for the Study of Industrial Medicine decided to hold an All-India Conference of Industrial Medicine in December, '49 at Jamshedpur. The object of this conference is to bring together all the medical officers associated with industry, and to exchange ideas and work in co-ordination; thus making their work more effective and more widespread. At present when India is being industrialised, indeed scientific planning of industrial medicine is vital. At this conference as the name indicates, are invited all the medical officers associated with industry throughout the country. It is, therefore, the duty of all the progressive industrial concerns to send delegates to this conference and every doctor associated with industry should attend. The

success of this long over-due conference depends on all the industrial concerns and the medical officers in Industry.

Jamshedpur, the biggest and one of the oldest industrial cities in India, is an ideal choice for the First All-India Conference of Industrial Medicine. All those interested in the progress of industrial medicine are, therefore, invited to participate. Those who wish to attend the conference and those who wish to read papers at the conference are requested to communicate as soon as possible with the Honorary Secretary, Society for the Study of Industrial Medicine, C/o. Tata Main Hospital, Jamshedpur, from whom further details can be had.

THE 12TH BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY

This Congress will be held in the Friends Meeting House, Euston Road, London, N.W.1, from 6 to 8 July, 1949. Sir Eardley Holland will be president and a full and interesting session has been planned. The first session will open with a discussion on *Modern Caesarean Section* introduced by C. McIntosh Marshall (Liverpool). Dr. Joe Meigs of Boston will read a guest paper on *Endometriosis;* Prof. C. F. Marrian (Edinburgh) with Dr. G. I. M. Swyer (London) will introduce the discussion on the *Methods of Assay and Clinical Significance of Pregnanediol in the Urine.* On the second day, under the chairmanship of Sir William Gilliatt, Prof. George W. Pickering (London) and Prof. F. J. Browne (London) will introduce *Essential Hypertension in Pregnancy,* and in the afternoon there will be papers on *The Management of Pregnancy in Diabetics and Herrnia of the Pouch of Douglas.* On the concluding day of the Congress the following will contribute to a symposium on *Modern Concepts in Diagnosis, Treatment and Prognosis of Carcinoma of the Uterus:—*

1. *The Diagnosis by Vaginal Smear.* Dr. J. E. Ayre (Montreal).

2. *Pre-cancerous Cellular Changes in Carcinoma of the Cervix.* Prof. Gilbert K. Strachan (Cardiff).

3. *Prognosis based on Biopsies.* Mr. A. Gluckmann (Cambridge).

4. *The Operation of Pelvic Exenteration.* Dr. Joe Meigh (Boston Mass.).

A discussion will follow each paper and Sir William Gilliat will introduce the final discussion of the meeting on *Maternal Mortality.*

Adequate provision has also been made for the social side of this occasion. On the first evening there will be a reception by the President and Council of the Royal College of Obstetricians and Gynæcologists; on the second evening there will be reception by the President of the Congress (Sir Eardley Holland) at the Zoological Gardens, London, and the last social function will be a Congress banquet in the Guildhall.

All those who hope to attend should apply as soon as possible to the Honorary Secretary, Mr. Ian Jackson, M.R.C.O.G. at 58, Queen Anne Street (Royal College of Obstericians and Gynæcologists, London, W. 1.

INTERNATIONAL BULLETIN OF HYGIENE

The following letter dated 15-12-48 from the Secretary-General, League of Red Cross Societies, 8, Rue Munier Romily, Geneva, Switzerland, to the Chairman of the Central Managing Body, Indian Red Cross Society, Red Cross Building, 20, Talkatora Road, New Delhi, is published for the information of the members of the I. M. A.:

I have the honour to inform you that the Health Bureau of the League of Red Cross Societies is going to publish, in the near future, a Health Bulletin for the purpose of informing all the National Societies on important Public Health questions, on discoveries in the field of medicine, on the work and new activities of Red Cross Societies in that field, etc.

We would be very glad to publish in the "International Bulletin of Hygiene" news concerning the work of your society in the field of public health and to insert also articles on different subjects written by your medical advisers.

We would also like very much to publish articles by eminent medical personalities of your country and we hope that your society will be kind enough to obtain their co-operation so as to make this Bulletin a scientific publication, worthy of the League.

DOCTORS IN PROPORTION TO POPULATION

It is doubtful whether many people could confidently guess which country in the world has most doctors in proportion to its population. According to a draft report on the Medical Professions in 23 countries, prepared by the World Medical Association in 1948, the answer is Jewish Palestine, with a figure of 382 per 100,000 population. Next come the United States with 140 per 100,000 population and Great Britain with 114. It is suggested that the outstandingly high proportion of doctors in Palestine is accounted for by the large number of refugee doctors who have emigrated there from Central Europe. After Great Britain comes Iceland (113) followed by Denmark, Canada and New Zealand, which have proportions of 105, 104 and 103 per 100,000 population respectively. At the other end of the scale are Finland (45), the Union of South Africa (42), Egypt (24), Arab Palestine (22), and, smallest portion of

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all, China, where there are only four doctors per 100,000 population. Put the other way round, this would imply that each Chinese doctor has 25,000 people to look after.—*J. Roy Inst. Pub. Health & Hyg.*, **12**:72, 1949.

DIET AND LONGEVITY

Three diets, resembling as far as possible ordinary human food, have been fed to three distinct groups of rats for the whole of their lives and for three generations at the Cornell University (U.S.A.) department of animal nutrition. One diet resembled the average human diet, the second was considered to be a better-than-average human diet, and the third was supplemented by vitamins. At the end of the tests, it was decided that none of the diets had lengthened or shortened the rats' lives. Similarly, rats whose only drink was coffee lived as long and looked as well as those that had never tasted it, though admittedly they only drank the stimulant when they were thirsty.—*J. Roy Inst. Pub. Health & Hyg.* **12**:75, 1949.

THE CARE OF TOOTH-BRUSHES

An interesting survey regarding the condition of tooth-brushes used in the U.S.A. has recently been concluded in America. Selected families were offered new tooth-brushes in return for sending in those that they were currently using. More than 8,000 brushes were received, out of which over 6,500 were found to be inadequate or unsuitable for such reasons as having bent or broken bristles, matted bristles, or being in an unwholesome condition. Almost 2,000 familes took part in the investigation, and as an average number of 4·2 tooth-brushes was received from each family, which on an average consisted of just under four persons, it is calculated that every member of the family had a tooth-brush. More than 80 per cent of the brushes needed replacement because they could not be regarded as effective hygienic articles or because their condition was such that they might injure dental tissue. Caked dentifrice and food particles at the base of the bristles were the reason why 2,000 brushes were unsatisfactory. Commenting on these conclusions, the Journal of the American Medical Association suggests that there is a case for some form of routine inspection and renovation service to be established for tooth-brushes, similar to those available for cars, heaters, and other domestic utilities. That is a matter for conjecture, but its second suggestion is something that everybody can follow; it is that: "The care of a brush of any kind should include thorough cleansing and drying after use and especially when debris collects." Evidence gained from an American tooth-brush survey made some years ago revealed that less than half the population have a tooth-brush which they use regularly. Although there is no great weight of scientific evidence to show that brushing the teeth is a vital measure in the prevention of decay or other dental diseases, the habit has overwhelming support from doctors, hygienists, and dentists.—*J. Roy Inst. Pub. Health & Hyg.*, **12**:77, 1949.

PUBLIC HEALTH DEPARTMENT, U.P.

The following is the statement issued to the press by Capt. S. K. Chowdhury, President, I.M.A.:

The Public Health Department, U.P. has promulgated certain useful health regulations by notification No. 948/XVI-830-49, dated March 4, 1949, on the ground that the province is "threatened with outbreak of cholera, typhoid and gastro-enteritis and the Governor is satisfied that the ordinary provision of the law for the time being in force are insufficient to prevent those diseases from spreading." These are meant to apply to "all the municipalities and notified areas and to all fairs in the rural areas throughout the province and remain in force for six months." These regulations if enforced boldly and properly all over the province at the same time will certainly have the effect of protecting the public from the epidemics, if, on the other hand, they are observed partially and by fits and starts they will not only be dead letter but law enacted to be flouted. A strict application of these excellent regulations will not secure for the Government the co-operation of the people most needed for these measures. The Public Health Department is already looked upon as a hostile camp by the vendors of articles of food and drink, and the customers, both ignorant and educated have little sympathy with the activities of members of the Public Health Department. They have confused ideas about healthful living and little faith in the modern preventive methods most of which they regard as useless and irksome. The confusion is worse confounded by attempts at synthesis of different systems of medicine. The followers of jharphunk, chromopathists and other 'pathists', grand mothers and fakirs are waiting round the corner to be recipients of state recognition and some of them will get it. It will be a bold Government to rise above these distractions and courageously adhere to the correct scientific procedure of prevention and control such as has been used and found successful in progressive countries.

Health consciousness and health discipline are prerequisite for the maintenance and improvement of a nation's health. Experiments in social medicine, the value of which has been demonstrated elsewhere in the world, may be tried out, with the assistance of the public, by the U.P. Government if its advisers are posted up with progressive views. But there is little chance of this unless the understanding and co-operation of the people can be secured. How can this be made possible? By carefully planning programmes of health education for children and the general public and implementing them. The teaching of hygiene should be made compulsory starting from the primary schools and this subject should be included in the curriculum of teachers' training course. It must be seen that the pupils, both children and teachers, are in a position to adopt such habits as they are taught in the class room. For this purpose it will be necessary to make change in the school buildings and the surrounding areas to carry the conviction home

that the authorities practise what they preach. The co-operation of the Education Department is essential. For the general population, by means of spoken word and visual impression, the Public Health Department can carry out successful propaganda. This is as important as literacy drive, if not more.

The initiative of health education should be taken by the Central Government in order to preserve uniformity of fundamental features in all the provinces. Preventive medicine which now can be considered a part of social medicine has made great progress in the countries where only one system is recognised by the state. These are countries where all the systems under the sun are not integrated, and practised and yet they show abundance of health, less morbidity and less mortality.

India will fall out in her march to progress if she does not keep abreast of other lands which have tried modern methods and succeeded in controlling and stamping out epidemics.

COLLEGE OF PHYSICIANS AND SURGEONS OF BOMBAY

The College of Physicians and Surgeons of Bombay held the D.G.O., D.C.H. and Second M.C.P.S. Examinations in April, 1949.

The following candidates have passed the D.G.O. Examination April 1949:

Abraham, Annamma (Mrs.), Chima, Dalip Kaur, (Miss), Daftary, Damayanti Ratilal (Miss), Desai, Pralhad Rao, Kalamkar, Vatsala Wasudeo (Miss), Kamat, Premanandi Lakshman, Navalkar, Prakashini Bholanath (Mrs.), Phalnikar, Madhao Dhundiraj, Rele, Snehalata Meghasham (Miss) and Sabnis, Gangu Ramachandra (Miss).

The following candidates have passed the D.C.H. Examination in April 1949:

Akolkar, Shantaram Krishna, Amin, Narin Chhotabhai, Coelho, Eric, Dikshit, Arvind Kashinath, Gupta, Vasant Prabhakar, Simmons, Charlotte (Miss) and Variava, Homi Ardeshir.

SIXTH INTERNATIONAL CONGRESS OF RADIOLOGY, LONDON

The Sixth International Congress of Radiology will be held in London from July 23rd to July 29th, 1950. The headquarters of the Congress will be at the Central Hall, Westminster, which will also house an extensive Scientific Exhibition. The Technical Exhibition of apparatus will be located in the Halls of the Royal Horticultural Society nearby.

The subjects chosen for the main scientific meetings are:—

1. General Congress Scientific Meetings:—(*a*) Radiological Achievement, 1937-1950; (*b*) Mass Radiology of the chest; (*c*) Supervoltage Radiotherapy and Radiation Hazards.

2. Diagnosis Section Symposia:—(*a*) Skeletal Changes in Blood Diseases; (*b*) Radiology of the Small Intestine; (*c*) Arthrography and (*d*) Angiocardiography.

3. Therapy Section Symposia:—(*a*) Method of Presentation of Results of Treatment; (*b*) Radioactive Isotypes; (*c*) Cancer of the Larynx and (*d*) Cancer of the Breast.

4. Biology Section Symposia:—(*a*) Radiation Histology; (*b*) Radiation Chemistry; (*c*) Radiation Genetics and (*d*) Mode of action of Ionizing Radiations.

5. Physics Section Symposia:—(*a*) Acceleration of Particles and Generation of Ionizing Radiation; (*b*) Radiological Units; (*c*) Radiotherapeutic Physics and (*d*) Production and Physical Properties of Radio-Isotypes.

Those wishing to attend the Congress as Full Members (£7 7s. 0d.) or as Junior Members (under 30 years of age on January 1st, 1950—£4 4s. 0d.) must be members of a radiological society, or sponsored by a rediological society. Ladies and children accompanying members can be registered as Associate Members (£3 3s. 0d.). Associate membership is also open to technical staff of radiological departments and laboratories, or of the X-Ray industry. A late fee will be charged to those registering after April 1st; 1950.

Members of the Congress may make their travel and hotel reservations through any office of Messrs. Thos. Cook and Son, Ltd., (or their associated company, the Cie Internationale des Wagons-Lits) who have been appointed the official travel agents for the Congress.

All communications in connection with the Congres should be addressed to the Secretary-General, Dr. J. W. McLaren, at 45, Lincoln's Inn Fields, London W.C. 2.

THE GENETICAL SOCIETY

The Genetical Society of Great Britain, founded by William Bateson in 1919, is celebrating its 100th meeting and 30th anniversary by holding a two-day meeting in Cambridge on June 30th and July 1st, 1949. The programme will include a review of early post-mendelian times and ideas; a series of lectures by guest speakers and by geneticists working in Cambridge; and a comprehensive demonstration of genetical work in progress in this country.

The notice states:

"Geneticists from other countries are cordially invited to be present. We would be most grateful if you could draw their attention to this invitation and we would be highly honoured by the presence of representatives from other genetical societies.

"Further details can be obtained from the undersigned. Anyone wishing to attend should send an information as soon as possible so that arrangements for accommodation can be made. Secretaries—G. Pontecorvo, Department of Genetics, The University, Glasgow, W.2. H. C. Callan, The Institute of Animal Genetics, Edinburgh 9."

INDIAN RESEARCH FUND ASSOCIATION

Excerpts from the report of the Seventeenth Meeting of the Nutrition Advisory Committee of the Indian Research Fund Association held in Madras on 1-12-48.

To review work in progress and consider the question of continuation or otherwise of existing enquiries—(A) The Committee recommended the continuation of the following enquiries:—

(*i*) Nutrition researches under Dr. V. N. Patwardhan at the Nutrition Research Laboratories, I.R.F.A., Coonoor.

(*ii*) Nutrition research unit under Dr. B. C. Guha at the University College of Science & Technology, Calcutta.

Dr. Guha is now a member of the Damodar Valley Corporation. He, however, gave the assurance to the Committee that, so long as he is in Calcutta, he will be able to supervise the work of the unit; the Laboratories at the University College of Science & Technology continue to be at his disposal.

(*iii*) Nutrition research unit under Dr. R. G. Chitre at the Seth G. S. Medical College, Bombay.

The Committee recommended that more concentrated effort to provide further information on the following problems should be made:—

(*a*) Nutritive value of pure-bred strains of cereals and pulses.

(*b*) The precursor and the physiological availability of nicotinic acid in foodstuffs.

(*c*) Absorption of fat from the intestines.

(*iv*) Role of fat in lactose metabolism under Dr. S. Banerji, Head of the Department of Physiology, Presidency College, Calcutta.

(*v*) Enquiry into metabolism of vitamin A (excretion of vitamin A in urine) under Dr. K. Rajagopal, Associate Professor of Nutrition, All-India Institute of Hygiene and Public Health, Calcutta.

(*vi*) Enquiry on the preparation of anti-rachitic substances under Prof. B. V. Bhide at the Maharaja Pratap Sinha Chemical Laboratory, S. P. College, Poona.

(*vii*) Bangalore School-feeding Scheme.

(B) The following enquiries terminate at the end of the financial year.

(*i*) Enquiry on the formation, function and variations of plasma proteins in health and disease under Mr. N. C. Datta at the Grant Medical College, Bombay.

(*ii*) Enquiry on the evaluation of proteins in terms of hæmopoietic activity and the relation of dietary protein to blood and muscle hæmoglobin under Professor M. Damodaran at the University Biochemical Laboratory, Triplicane, Madras.

(*iii*) Enquiry on plant carotenoids in relation to their biological importance under Dr. M. Damodaran at the Laboratories of the Council of Scientific and Industrial Research, New Delhi.

(*iv*) Enquiry on the growth-promoting factor present in Bengal gram under Dr. M. Damodaran at the Laboratories of the Council of Scientific and Industrial Research, New Delhi.

To consider New Proposals—(A) The Committee recommended the following new enquiries:—

(*i*) Enquiry into the nutritive value of foods to hospital patients in India under Dr. K. Mitra, Adviser on Nutrition, Directorate-General of Health Services, Government of India, New Delhi.

(*ii*) Enquiry into the effects of malnutrition on the physique and more particularly on the blood picture including hæmoglobin and plasma-protein concentration as also the treatment thereof with high protein diets, protein hydrolysates, etc. under Professor (Miss) S. Chowdhury and Dr. K. Mitra at the Lady Hardinge Medical College, New Delhi.

(*iii*) Enquiry on the studies on the bio-synthesis of nicotinic acid under Dr. S. Banerji, Head of the Department of Physiology, Presidency College, Calcutta.

(*iv*) Enquiry on the physiological effect on dietary protein under Dr. M. Damodaran at the National Chemical Laboratory, Poona.

The original proposal was for the establishment of a nutrition research unit. The Committee, however, recommended that the term "enquiry" should be used instead.

(B) The following enquiries were not recommended.

(*i*) Investigations into the causes of rancidity of fats with special reference to degradation by moulds under Prof. M. N. Goswami, Department of Applied Chemistry, University College of Science and Technology, Calcutta.

(*ii*) Enquiry on the study of the digestibility of various cooked Indian food preparations under Dr. J. D. Pathak, Topiawala National Medical College, Bombay.

(*iii*) Enquiry on multi-purpose food by Dr. N. Purshottam.

To consider the Progress of Nutrition Work in Provinces—1. *Assam*—Diet surveys were carried out on college hostel students, tea-garden labourers and in a tribal village. Multi-vitamin tablets were distributed through maternity and child welfare centres for the vulnerable groups in certain regions of the province. Education and publicity are being undertaken through the medium of lectures and distribution of informative pamphlets.

2. *Bihar*—Diet surveys in the districts of Patna, Monghyr and Manbhum were carried out during the year. There had been outbreaks of lathyrism in these districts and hence the diets of villagers suffering from lathyrism and of those not affected with the disease were carried out in the same localities. The diets were generally low in calories and deficient in protective foodstuffs. Examination of over 3,000 school children was also carried out in different districts of the province. Other activities consisted of publicity and propaganda by means of exhibitions, talks and distribution of information.

3. *Bombay*—Diet surveys were undertaken in the hospitals and messes in Bombay City and suburbs and thirteen other towns in Bombay Province and recommendations for improving the diets were made. In Bombay City, 718 school children were examined for their nutritional status; of these, 234 boys showed

clinical signs of deficiency disease. The investigation on school feeding of 4,000 Parsi school children which commenced last year has been continued. Measures for increasing production of milk, fish, shark-liver oil, vitamin tablets, vegetables etc., are being carried out with vigour. Education and publicity campaigns are being pursued as in previous years.

4. *Madras*—Diet surveys in eight districts of the province were carried out. The diets of the poor class people showed no appreciable variation from those obtaining in the last few years. Nutrition surveys on 2,118 school children in some of these districts showed prevalence of deficiency disease due to lack of vitamins A, B complex and C.

The ameliorative measures consisted in the supply of free mid-day meals, milk, shark-liver oil, calcium lactate, yeast and multi-vitamin tablets in certain areas. Educational and publicity work has been done as in previous years.

To consider the Report on the Adoption of Uniform Methods for the Evaluation of Nutritional Status of Population Groups in India prepared by the Sub-Committee appointed by the Nutrition Advisory Committee at its Meeting held on the 8th December, 1947 (Para 8 of the Report of the Sixteenth Meeting of the Nutrition Advisory Committee—December, 1947).

The Committee adopted the report of the Sub-Committee attached as Appendix.

The Committee particularly wishes to draw the attention of nutrition officers in Provinces and States and in other institutions interested in the work to adopt the methods suggested in the report and report their findings at the next meeting of the Nutrition Advisory Committee.

To consider the Possibility of Publication of a Popular Monograph on Wheat—The Committee recommended that Dr. K. Mitra, Dr. K. P. Basu, and Dr. K. Rajagopal be requested to prepare the draft of the popular monograph and submit it for consideration at the next meeting of the Nutrition Advisory Committee. Dr. Peng Cheng Hsu stated that the Nutrition Division of F.A.O. had collected considerable information on the subject and the Organization would be very glad to be of assistance if needed.

APPENDIX

The following Nutritional Assessment Schedule has been recommended by the sub-committee to be used in all future nutritional surveys undertaken in India:

Nutritional Assessment Schedule

		1. Sex
		2. Age
		3. Height
		4. Weight
		5. Hip width (Intercristal)
I. General	.. ..	6. Appearance
II. Eyes		
(A) Conjunctiva	..	7. Xerosis
		8. Pigmentation
		9. Discharge
(B) Cornea	..	10. Xerosis
		11. Vascularisation
(C) Lids	..	12. Excoriation
		13. Folliculosis
		14. Angular Conjunctivitis
		15. Night blindness
III. Mouth		
(A) Lips	..	16. Condition
(B) Tongue	..	17. Colour
		18. Surface
(C) Buccal mucosa	..	19. Condition
(D) Gums	..	20. Condition
(E) Teeth	..	21. Fluorosis
		22. Caries
IV. Hair	.. ..	23. Condition
V. Skin		
(A) General	..	24. Appearance
		25. Elasticity
(B) Regional	..	26. Trunk
		27. Face
		28. Perineum
		29. Extremities
VI. Adipose tissue	..	30. Quality
VII. Œdema	.. ..	31. Distribution
VIII. Bones	.. ..	32. Condition
IX. Heart	.. ..	33. Size
X. Alimentary system	..	34. Appetite
		35. Stools
XI. Nervous system	..	36. Calf tenderness
		37. Paresthesia

Key to the Nutritional Assessment Schedule

		1. Sex
		2. Age
		3. Height
		4. Weight
		5. Hip width (Intercristal)
I. General	.. ..	6. Appearance 0 Good 1 Fair 2 Poor 3 Very Poor
II. Eyes		
(A) Conjunctiva	..	7. Xerosis 0 Absent, glistening and moist. 1 Slightly dry on exposure for ½ minute, lack of lustre. 2 Conjunctiva dry and wrinkled. 3 Conjunctiva very dry and Bitot's Spots present.
		8. Pigmentation 0 Normal colour. 1 Slight discolouration. 2 Moderate browning in patches. 3 Severe earthy discolouration.
		9. Discharge 0 Absent 1 Watery, excessive lachrymation 2 Mucopurulent 3 Purulent
(B) Cornea	..	10. Xerosis 0 Absent 1 Slight dryness and diminished sensibility 2 Haziness and diminished transparency 3 Ulceration

11. Vascularisation
0 Absent
1 Circumcorneal injection of blood vessels
2 Vascularisation of cornea

(C) Lids ..

12. Excoriation
0 Absent
1 Slight excoriation
2 Blepharitis

13. Folliculosis
0 Absent
1 A few granules
2 Lids covered with extensive granules
3 Hypertrophy

14. Angular conjunctivitis
0 Absent
1 Present

15. Night-blindness
0 Absent
1 Present
N.B.—Exclude other eye diseases not associated with nutritional defects.

III. Mouth

(A) Lips ..

16. Condition
0 Normal
1 Angular stomatitis, mild
2 Angular stomatitis, marked

(B) Tongue ..

17. Colour
0 Normal
1 Pale but not coated
2 Red
3 Red and raw

18. Surface
0 Normal
1 Fissured
2 Ulcered
3 Glazed and atrophic

(C) Buccal mucosa ..

19. Condition
0 Normal
1 Stomatitis

(D) Gums ..

20. Condition
1 Bleeding and/or gingivitis
2 Pyorrhœa
3 Retracted

(E) Teeth ..

21. Fluorosis
0 Absent
1 Chalky teeth
2 Pitting teeth
3 Mottled and discoloured teeth

22. Caries
0 Absent
1 Slight
2 Marked

IV. Hair .. ..

23. Condition
0 Normal
1 Loss of lustre
2 Discoloured and dry
3 Sparse and brittle

V. Skin

(A) General ..

24. Appearance
0 Normal
1 Loss of lustre
2 Dry and rough or crazy pavement
3 Hyperkeratosis, phrynoderma

25. Elasticity
0 Normal
1 Diminished
2 Wrinkled skin

(B) Regional ..

26. Trunk
0 Normal
1 Collar like pigmentation and dermatitis around the neck

27. Face
0 Normal
1 Nasolabial seborrhœa
2 Symmetrical suborbital pigmentation

28. Perineum
0 Normal
1 Scrotal or pudendal dermatitis

29. Extremities
0 Normal
1 Symmetrical dermatitis with pigmentation of glove or stocking type

VI. Adipose tissue .. (to be judged by the examination of the arm over the biceps)

30. Quantity
0 Normal
1 Deficient

VII. Œdema .. ..

31. Distribution
0 Absent
1 Œdema on dependent parts
2 Œdema on face and dependent parts
3 General anasarca

VIII. Bones .. ..

32. Condition
0 Normal
1 Stigmata of past rickets

IX. Heart .. ..

33. Size
0 Normal
1 Apex just outside the nipple line
2 Enlarged

X. Alimentary system ..

34. Appetite
0 Normal
1 Anorexia

35. Stools
0 Normal evacuation
1 Diarrhœa

XI. Nervous system ..

36. Calf tenderness
0 Absent
1 Present

37. Paresthesia
0 Absent
1 Present

OBITUARY

MR. PHILLIP BRUCE WHITE, F.R.S.

Mr. Phillip Bruce White, F.R.S., aged 57, who died, as recently announced, in a hospital in London on March 19, was well-known in the medical world as the leading authority on the bacteriology of intestinal infections. This sad event will be considered as a great loss not only to the British scientists but also to the entire scientific world which will deeply mourn his loss.

Born in an old Scottish family, he was brought up in Banger, North Wales, where his father, Mr. Phillip Jacob White, was the Professor of Zoology. Following the footsteps of his father he graduated in Zoology and Botany and took up Bacteriology almost casually, which became his abosrbing passion in subsequent years. He served in 1915 as an Assistant Pathologist at the Trinity College, Dublin and in 1916-19 as a senior Pathologist in Tideworth. In 1919 he went to Aberdeen, and it was here that he made his first important discovery that the cause of the Isle of Wight of honey bees was a parasitic mite, but he found his meteor in bacteriological studies in food poisoning. He worked first under Dr. W. G. Savage at Bristol, then at the Lister Institute, and in 1927 he joined the staff of the National Institute for Medical Research, Hampstead. The relationship of the important Salmonella group of food poisoning organisms were hard to disentagle but Bruce White's studies brought order out of chaos and formed the basis of diagnostic method now used all over the world. Moreover, out of his work, general principles having imoprtant bearings on the classification and identification of bacteria in general were deduced.

He had turned his attention to the bacteriology of Cholera since 1934 and his work helped to classify the relationship between true Cholera vibrios and harmless organisms resembling them. He visited India in 1946 to study Cholera and in 1947 he was called to Egypt along with Sir John Taylor during the severe cholera outbreak there.

Bruce White's successes were largely due to his versatility and width of knowledge. His boyhood has given him a wide knowledge of Zoology and Botany; he had a sound basic knowledge of Chemistry and he was prepared to use the methods of several disciplines, if needed, in the solution of a problem. His associates considered him as an ideal colleague, a top ranker in research and a true gentleman. He was elceted F.R.S. in 1941 in recognition of his meritorious work. He leaves a wife and two sons both of whom have entered the field of medicine.

Dr. S. C. Seal, Calcutta writes:

"The writer had the privilege of coming in contact with him through correspondence while doing work on Cholera under Dr. Linton at the All-India Institute of Hygiene and Public Health, Calcutta. At that time he was struck by the broadness of his views on research and his openness to be convinced of the other's point of view. He had further opportunity of meeting him personally and seeing him at work at close quarters in 1946 when he (Mr. White) visited India to study Cholera problems locally. During the short period that he was in Calcutta at the School of Tropical Medicine he won the admiration of all with whom he came in contact by his unassuming manners, kindliness and unselfishness of an order none too uncommon among scientific men, and above all by his ready wit and humour which always made the topical discussion more lively. The writer's greatest satisfaction was that within this short time Mr. Bruce White, in association with Dr. Shrivastava, succeeded in transforming Ogawa 'O' type of vibrio into Inaba 'O' type and *vice versa in vitro,* thereby confirming the possibility of such a happening taking place in natural field conditions previously suggested by the writer in his communication entitled the "Problem of Endemicity of Cholera in Bengal" in 1945. His personal recognition of our work on Cholera was magnanimously expressed in his statement made before the meeting in 1947 at Cairo on the Egyptian outbreak of Cholera. As a matter of fact, his visit to India, although for a short while, proved to be a source of encouragement and inspiration to many who had the privilege of coming into contact with him."

REVIEWS

NUTRITIONAL DISORDERS OF THE NERVOUS SYSTEM—By John D. Spillaine, 1947. Demy 8vo., pp. XV+280. Published by E. S. Livingstone Ltd. 16 & 17, Teviot Place, Edinburgh.

To a country where nutritional deficiency is widely prevalent, contributions on subjects related to nutrition are particularly welcome. The present monograph by Spillaine is the result of the author's experiences during World War II in the prison camps of Germany and the Far East. As George Riddoch states in the foreword, "it is an interesting, balanced and critical account of a fascinating subject." Apart from chapters on subjects like Pellagra, Beriberi, Wernicke's encephalopathy which have been fully dealt with, there is a special chapter on nutritional neuropathy in warm climates. Nutritional aspect, until recently, drew very little attention in the tropics. Spillaine makes bold to state "Medical research in these countries has been mainly conducted with the object of safeguarding the health and efficiency of white residents—usually military and Government personnel."

The book is well illustrated and its pages are interspersed with useful charts and tables. At the end of each chapter there is a useful list of references.

H. K. Roy.

NUTRITIONAL AND VITAMIN THERAPY IN GENERAL PRACTICE—By Edgar S. Gordon. Third Revised Edition, 1947. Crown 8vo., pp. 410. The Year Book Publishers, Inc.

Chicago. 304, South Dearborn Street, Chicago, Illinois. Price $5·00.

Dr. Gordon must be congratulated on his success in presenting the available facts of clinical nutrition in a concise, correct and readable form. Considering the time of its publication his book is amazingly up-to-date. From a welter of confusingly voluminous literature, materials useful for practitioners and students have been collected and integrated. Much of the present-day vitamin therapy and the literature on it are uncritical and it has been a masterly job of Dr. Gordon to have avoided in his book much that is unsound for clinical practice.

Apart from the usual contents of a book of this nature, there are special chapters on weight control, dental problems in nutrition and the economic side of nutrition. An appendix includes commercial preparations, laboratory methods of assay for deficiency diseases and table of nutritive values of various foods. Useful tables and illustrations enhance the value of the book, which, we believe, shall find an honored place in the physician's book-shelf.

H. K. Roy.

A PRACTICAL HANDBOOK OF HOSPITAL ADMINISTRATION—By Sardar Sahib Dr. Rajinder C. Grewal, M.B.E., F.R.F.P.S. (GLAS.), L.M.S. (S'PORE), M.A., L.L.M. (U.S.A.), Barrister-at-Law. Double Crown 6vo., pp. 149+VII. Price not mentioned.

This little handbook deals with the hospital administration of the past. With the fast changing of the conditions in India we doubt whether this book will be of much use to the hospital administrators. But as the book is an outcome of mature experience it can form a good basis for all future work on hospital administration.

N. G. Mojumdar.

THE HARBINGERS OF FUTURE MEDICINE—By Dr. Pranjivan M. Mehta, M.D., M.S. F.C.P.S. Pp. 56. Price Re. 1/-. Published by Shree Gulab Kunverba Ayurveda Society, Jamnagar.

INDIA AND THE WORLD IN MEDICINE by the same author. Pp. 44. Price As. -/12/-. Published by the same publishers.

Both are short treatises with the same object in view, namely, to abolish compartmentalism in medicine, so that all schism and separatism may vanish and 'give place to a space-time vision' in service, 'where all knowledge and life are one.' We agree with the author that "unless and until the wisdom imprisoned in Sanskrit classics or in foreign languages become the common property of all men"—there can be no emancipation from conservatism. We should have been happy if the author made more realistic and practical suggestion as to how he proposes to absorb the so-called Ayurveda into Modern Medicine.

K. K. Sen Gupta.

PULMONARY TUBERCULOSIS, DIAGNOSIS AND TREATMENT—By Dr. S. Sen, B.SC., M.B. (CAL.), M.R.C.P. (LOND.), F.R.F.P.S. (GLAS.), D.T.M. & H. (ENG.). Demy 8 vo., Pp. 74. Bookland Limited, Calcutta-6. Price Rs. 4/8/-

This is a book for diagnosis and treatment of pulmonary tuberculosis. From a perusal of the pages it looks that the book has been prepared in the style of lecture notes of a teacher. For this reason much of the interest in reading a treatise of this nature is lost. Moreover, many discussions are scrappy and do not go into the details, *viz.*, streptomycin and B.G.G. vaccination. Surgery in Pulmonary Tuberculosis which forms appendix A, is a general discussion on the subject. There are no x-ray plates. Printing mistakes should be corrected in the next edition.

B. P. Neogy.

THE CONQUEST OF TUBERCULOSIS—By A. T. W. Simeons, M.D. Double Crown, p. 75. Published by Thacker Spink & Co. (1933) Ltd., Calcutta. Price Rs. 2/-

No tubercular patient can afford "to wait". Precious time is frittered away on the waiting list because patients are too inclined to believe nothing short of sanatorium treatment is going to be of avail.

If we had enough sanatoria to accommodate all our patients then the problem would have been solved. But we have not. Nor will we ever have. So as the author says "For years to come the home will remain the battlefield where main forces of tuberculosis will have to be fought."

This statement is more true for this country where a vast majority of patients are caught between poverty and high cost of adequate sanatorium treatment. The efforts of the generous public and the Government of maintaining free beds are praiseworthy but totally inadequate for the vast problem.

So the author has laid down simple but strict rules of home treatment in this book. Phthisiological jargons have been omitted as far as possible because this book is really meant for the patient. The language is simple, instructions are clear, elaborate and definite. The author has discussed many problems of a tubercular patient, *e.g.*, diet, rest and exercise, climate, marriage and pregnancy.

The book is encouraging and will help the patient to understand his problems.

B. P. Neogy.

CORRESPONDENCE

The Editor is not responsible for any views expressed by contributors—EDITOR.

OUR DRESS

Sir,—Ever since 1942 movement a certain class of people have become hypercritical about Indians wearing suits, neckties and hats. Personally up-to-date I wear this latter dress exclusively (all the time I am on professional work) and hence I had to face severe verbal attacks from friends and gentry. Rashtrapathi Dr. Pattabhi was reported to have remarked at a gathering of Madras Medicoes that ties etc. are symbols of a bygone age. Lately Sardar Vallabhbhai Patel seems to have suggested that a long coat buttoned from neck and a pyjama or sarvani or so should be adopted as dress for all Indians. So I request you to elicit the opinion of the Working Committee of our Association on this matter and publish its guidance in our journal as to the design of dress which should be common to all doctors (practising modern scientific system) in India. Now that there is a World Medical Association, I wish it suggests a common uniform for all doctors of the world because we form a fraternity.

I am strongly of the opinion that the dress should help any passer-by to identify a doctor even when he is amidst a crowd, just as a passenger on a train is able to spot out with advantage the station master, the guard, the police constable, the porter etc. by dress. Because a doctor's services also might be needed most unexpectedly and wherever he is he cannot dissociate himself from his office.

While discussing about the various items of dress I suggest that the following points are to be considered:

(*i*) Head dress—A hat gives shade and with a plastic cover protects from rain over a wider area than a Gandhi cap or turban. Whereas a umbrella has to be carried by a hand, the head can carry the hat its shade-giver. While travelling in jolting tongas (we have what are called jutkas here drawn by a single horse) the hat effectively protects from knocks on head. While entering from below low thatched roofs of huts and passing through short thresholds hat protects from dangerous hits like a steel helmet of an ARP worker.

(*ii*) The Coat—It should carry in a convenient manner the stethoscope, pen, thermometer, torch light, knee tapper, diary, purse, kerchief etc.

(*iii*) The lower end of an ironed pant is less soiled than that of a pyjama. Anyway either is preferable to a dhoti (which my Andhra friends were insisting on my wearing) because while getting up a bicycle or getting up or down in haste from a crowded bus or any public vehicle, the dhoti is a definite handicap.

(*iv*) The footwear—I hope these ultranationalists have not yet started denouncing shoes.

The doctor's dress should also distinguish him from that of a ward boy, male nurse, thoti, etc.—I am etc.

Tekkali,
Vizagapatam District,
6-3-49.

M. V. RAMA RAO, M.B.B.S.,
Member, I.M.A.
Vizagapatam Branch.

'AN INTERESTING CASE'

Sir,—I have read with interest Dr. Kacher's letter in the December, 1948 issue of J.I.M.A. I had a case of exactly similar nature under me for a long time. He too had Giardia infection and long suffered from it (1927-41). Dermatitis confined to a particular site was noticed by me early in that case (Das Gupta *J. Indian M.A.*, **9**:67, 1939). For the disease the patient took repeated courses of stovarsol and atebrin. It is interesting to note that the dermatitis at first used to disappear on the use of stovarsol. Subsequently he developed skin condition almost similar to that observed by Dr. Kacher. It started with itching and burning sensation followed within a few minutes by inflammation of circumscribed areas of skin which rapidly turned copper-coloured with development of blisters containing clear bacteriologically sterile serum. There were a few sites over which these eruptions invariably appeared. These were the margin of the lips, lobes of the ears, a particular area on the outer side of the left leg at its lower third, an area over the right iliac region, one on the outer side of the right arm, another on the right side of the back. Darker areas were left behind but are getting clearer very slowly.

On careful watch I found these erruptions to be invariably precipitated by the ingestion of stovarsol, aspirin, veramon or any other analgesic drug as well as any form of purgative. Previous to the attack of giardiasis or rather the prolonged use of stovarsol these drugs never produced any untoward effect. I, therefore, came to the conclusion that these were symptoms of allergy which developed from a change in the system by the long use of the arsenical preparation and the damage done to the liver by the drug as well as by the toxin of giardia intestinalis.

The patient is now free from that infection and does not require stovarsol neither does he use any analgesic and purgative and have had no attack of allergy since 1942. He had been having those attacks since 1939. It is interesting to note that atebrin and its equivalent preparations did not produce any eruption although they too were used for a long time alternately with stovarsol. I am etc.

Khulna, 7-3-49.

N. C. DAS GUPTA.

ALL-INDIA INDUSTRIAL PHYSICIANS AND INDIAN JOURNAL OF INDUSTRIAL MEDICINE

Sir,—While industrial medicine has attained its manhood in all Western countries, it has just taken birth in India. If it is to be nurtured on right lines, it is necessary that industrial physicians all over the country should come together and pool their talents for its advance. This would be possible if each industrial district like Bombay, Calcutta, Jamshedpur, Madras, Kanpur, etc. have a local asosciation of industrial physicians, and all these local associations should be affiliated to a parent body of an association of all-India industrial physicians working under the aeges of the Indian Medical Association. This would bring together at least once a year the whole talent of industrial physicians at the Annual Meeting of the All-India Medical Conference.

The parent body should also publish an Indian Journal of Industrial Medicine which should be patronized by all the branch asociations.

The scheme suggested above is more or less on lines of one adopted by the industrial medical officers of England, and it seems to work very satisfactorily there.

I would much appreciate it if you will publish this letter in your magazine and invite opinions. I am etc.

Bombay House, Bruce St.,
Fort, Bombay.

H. P. DASTUR, L.M.S,
Medical Officer,
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A CASE FOR INVESTIGATION

Sir,—I am sending the following notes of a case which might interest your readers:

Case Note—Gouri Bala, 22 years, Hindu female was attacked with fever with rigor and seven hours after, the temperature touched the normal line. Fifteen hours later the temperature again rose upto 105°F. The patient's relatives observed that suddenly her left hand beginning from the palm became bright red. When I attended I saw the patient's condition as follows:—

Temperature—105°F., pulse—125 per minute; respiration—27 per minute; pupils—slightly dilated, equal and reacting to light; spleen—2" enlarged below the costal margin; liver—palpable and tender; tongue—coated and dry; look dull; urination—scanty; no neck rigidity present; the pt. lost fine sensation to the red area. But pain sensation was intact; the pt. was semiconscious; the red area has extended up to the left pectoral region in front and scapular region behind; the left mammary gland also was bright red.

I took a blood slide for malarial parasites. I injected one ampule of quinine dihydrochloride 10 grains in 2 cc. in the gluteal region and glucose 25 per cent 100 cc. and one ampoule of sodibicarb I.V. Her bowels were moved with soap water enema. A simple alkali mixture was also given. 10 hours after the 1st dose of quinine a second injection was given. By this time the blood report came. M.T. was found in huge numbers. On the next day, that is, on 15-8-48 quinine bihydrochlor 5 gr. tablet three times in a day was given by mouth with the same alkaline mixture and penicillin G (Glaxo) was given in doses of 200,000 at six hours' interval. In this morning I marked that the redness was much reduced. On 16-8-48 the redness completely disappeared and the temperature dropped finally. The same treatment was given upto 17-8-48 but the dose of penicillin was reduced to 25,000, three hourly.

Will any of the readers explain why the left hand became bright red and why that red area lost fine sensation. I am etc.

SANAT KUMAR MUKERJEE, L.M.F.
Nimtala. Midnapur,
West Bengal.
13-8-48.

THE DRAFT MEMORANDUM ON INDIAN SYSTEMS OF MEDICINE BY I.M.A.

Sir,—The draft memorandum about the Indian systems of medicine (I.S.M.) by the Indian Medical Association (I.M.A.) is objectionable for reasons noted below and therefore requires reconsideration and remodelling which would help the readers, not much conversant with the I.S.M.—the Western system followers are mostly so—to grasp the situation.

1. The draft does not seem to make any difference between a medical system and a medical pathy (a variation in the technique of treatment). All well-known scholars, Eastern or Western, have accepted that Ayurveda, Tib and modern medicine are systems, the former two being as scientific in the olden days as the last one at present.

2. It has disposed off the Tib (Unani) system in few lines very unfairly and inadequately.

3. In view of the fact that in the past ages owing to historically blank periods of scores or even hundreds of years, it is useless waste of energy to trace any sequence of progress and assign with any assertion the parenthood to any particular system. It only awakens obstinate sentiments based on nationality, religion etc.

4. It has not taken into consideration that the present Western system, devoid of the modern aids, solely consequent on the mechanistic progress of the

world, runs very much parallel to Tib and Ayurveda. The humoral theory of all these is mostly akin to each other and need not be thrown out as useless simply because the Western people have done so. Even the leading western scholars accept that the Hippocratic clinical acumen is full of scientific wisdom; they only regret they cannot find a way to co-relate it with the modern mechanistic mentality.

5. Instead of taking a general review of the I.S.M. the draft has dived into debatable details and made too early commitments which need a good deal of co-operation, consideration and practical demonstration by competent scholars.

6. The draft unnecessarily lays great stress on the one catching sentence in the Bhore Committee report purporting that the I.S.M. are "static and stagnant".

7. The draft reflects the opinion, reiterated often by Western system followers—Indians or Europeans—that the only good thing we may pick up from the I.S.M. is the study of some few effective indigenous drugs which could be added to the western pharmacopœia. As a matter of fact every drug or substance in the world, indigenous or foreign is useful in the hands of a rational medico, if he has got a wide aspect of pharmacology, which ought to include the knowledge of drug-effects, from the infinitesimal to gross doses on the living body. The olden sages had this attitude.

8. The draft, though it has dealt with unnecessary details, has not stressed the utility of "Pathya or Parhej" of the I.S.M. according to the constitution of the individual, a subject, not propery dealt with, as yet, by the modern medicine and which is of paramount concern to the patient.

It being unfair to criticise any draft without making constructive proposals, I suggest the alternative draft as—

1. Medicine is an age-long subject developed in different countries, at different times and up to different levels according to the proportion of available intellect and/or mechanistic aids.

2. It is both a science and an art. So long as it has to deal with 'life or vitality' whose nature or limits, though not fathomable by up-to-date methods, we have to devise some philosophy for practice. We have the same done in I.S.M. which requires interpretation in new light and addition or modification wherever necessary.

3. I.S.M. and olden Western medicine are akin to each other, as regards medical philosophy or practice.

4. I.S.M. though flourished largely in old non-mechanistic age owing to the very wide historically blank gaps, it is difficult and at present fruitless to trace the sequence of their progress, much less to assign parenthood to any one system.

5. Though not with the present speedy means of travel, undoubtedly the East and West established contact, with the inevitable interchange or interaction of language, dress, culture medicine etc.

6. Any medical system to be complete, though a petty one, ought to inculcate the following five branches:—

(*i*) Anatomy and physiology; (*ii*) pathology and diagnosis; (*iii*) knowledge of materia medica (drugs and instruments); (*iv*) therapeutics (psychopathy, pharmacopathy and mechanopathy and (*v*) hygiene. Whatever the shortcomings be, the I.S.M. have attended to these, as best as they could. Without mutilating their core it is our duty to provide for the failings.

7. I.S.M. books as handed down to us to-day are not in a condition to be used as texts straight away for the budding medico. In recasting these, new medical knowledge could be interwoven by competent workers. The Ayurvedists have in the mediæval period welded the lore of pulse to their older science in their own way which, in the present times would be too crude. Without mutilating the useful part of the humoral theory philosophy we can add things which have stood the practical tests. This can neither be done posthaste nor with ruffled non-academic sentiments. Until this is done all quasi-I.S.M. teaching institutions should be closed altogether. The products of these institutions are only helping to demerit or even extinguish I.S.M.

8. A deeper rational study of I.S.M. pharmacology will provide us with—

(*i*) more potent and stable therapeutic products (Rasayanas etc.) prepared from local or foreign substances;

(*ii*) insight to utilise single drugs—local or foreign to cover various clinical syndromes.

(*iii*) Economical use of drugs, a factor so important for our poor country.

(*iv*) A method to place the simple drugs in the hands of illiterate or lay people to rectify many of their daily minor ailments, particularly in distant, ill-equipped villages.

This is only a rough outline of what can be achieved economically by patience. Details can be worked out by co-operative team work by Vaidyas and Doctors.

To do this economically, efficiently and quickly the best way is to offer to the Vaidyas, in Government Hospitals, honorary posts with same status and facilities as the honorary doctors. The Vaidyas should be allowed to avail themselves of the clinical aids as best as they think fit. They should have their medicines

from Government recognised I.S.M. pharmacy. They should be allowed to use drugs 'foreign' to their tenets, only if they can fill in the case record, the effects of those drugs according to the tenets of I.S.M. Such records the more truthful they be, the more useful they would be to compile a pharmacopœia intelligible to the followers of Western or Eastern medical systems. I have repeatedly requested many Vaidyas of all-India fame to co-operate in testing *un-named* substances—though known to all in the I.S.M. pharmaceutical way. All have evaded. This leads any one to think that their demand to have separate hospitals is not without some inner purpose.

The doctors, on their part, should not continue to think that the latest methods are the final and only touchstone to test the effects of drugs on the living body which, as a biological entity reacts so variously. Pharmacological philosophy is the gateway leading to the tenets of any particular medical system.

I would court co-operative criticism from any Vaidya or Doctor who has at heart only academic scientific interest. I am etc.

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THE SYNTHESIS OF FOUR INTO ONE

Sir,—I have been looking for nearly two months for any opinion from the outstanding scientific medical men from any part of India on the proposed legislation to register those practising Homeopathic, Ayurvedic and Unani system of medicine and to create synthesis of these three with the scientific system called allopathy. These proposals are on the anvil of the Central as well as the Provincial Governments. So far I have not been successful in my search though I have been scrutinizing most of the important daily papers and some medical journals. Are the allopathic doctors to understand from the silence of the big bugs of the profession that they have acquiesced in this synthesis or are they to draw their own conclusion from their shut up brains and mouths. Scientifically inclined, I must admit that I hold the brief for scientific medicine. Acting as a free man who wants freedom for all, I can not object to any one following his own inclination and practising any system of medicine, provided it is based on science and follows scientific methods so that no one may practise at the risk of others life. Science being one all over the world there could not be in India, by any stretch of imagination, four scientific systems of medicine. We can come to truth through science only and not through mysticism or deception. The Ayurvedic and the Unani are the oldest systems and might have been scientific in those days. From these systems the modern allopathic one has been evolved through experiment and research. The modern medical system is neither Western or Eastern, nor Northern or Southern but International and Universal. It will be admitted by all that in these old systems there are few drugs which used in crude form in some certain cases are efficacious and that their drugs are comparatively cheaper than those used by allopaths. These two facts form the argument of this synthesis, though they do not make this system scientific. If the old systems wish to or the authorities want to turn these into scientific systems, they will automatically be allopathic.

In the jungles of India there are many herbs, plants and roots very useful but are not known to the old systems. Therefore the only reasonable course to adopt would be to conduct a research about these useful drugs and to add these drugs to the allopathic pharmacopœia. The aforesaid statement will bring forth the reply from the critics of the allopathic system that the British for selfish motives and to rob India of her wealth introduced the so-called Western system, keeping the old system undeveloped and suppressed. Granting that it is so, the time is most opportune to reverse the gear to suppress the Western system and to start research and experiments to bring the old systems into their own, and to the highest level of efficacy by scientific ways and means and thus show to the whole world what we are capable of doing in the field of medicine. The question of money should not be a hindrance, the drain on India for importing the costly western drugs will stop and will be more than sufficient for the purpose. India then will be a great nation supplying the whole world cheaper and efficient drugs. Has this idea occurred to the proposers of this synthesis? Is it not worth trying it?

We cannot progress without science, we must either believe in it, introduce it in all walks of life and make it a common property of each and every one man in towns and villages, or we must wholly reject it. We cannot say that we will have scientific technology in industry, navy, army and aviation and not in medicine. Any system of medicine to be useful must prove its efficacy not only in the treatment of disease, the human flesh is heir to but also its efficacy in preventing disease and to maintain health of the people by medical health service. The scientific medicine is based on the theory that all diseases are caused by germs visible or invisible, filtrable or unfiltrable. So far this theory holds the field. The results obtained not only in the treatment of diseases but also the prevention of diseases have amply proved the truth of this theory and practice. Let the old systems prove the same. These systems are based on humours, cuf, pith and vath. Every disease is diagnosed on these foundations or on symptoms. Human body is a complex and complicated mechanism. Scientific medicine has so many inventions to its credit to solve the complex diseases of the human body. Inspite of these equipments very often right diagnosis is not possible. Science has not been able to find out all about the human body, but this does not mean that science will not come to know in future. Nothing is unknowable to science. This shortcoming cannot be the reason for us to go back to the primitive systems. Inspite of the ways and means to diagnose the diseases, allopathic doctors make mistakes and many persons die

due to their errors. Is it too much to imagine that many more people die in the hands of those who practise the old systems. Is there any records kept of such deaths? If the old systems begin now to introduce scientific methods as suggested by authorities in forming this synthesis, these will not by Ayurvedic, Unani or Homeopathic but allopathic. There cannot be different anatomies, pathologies, bacteriologies, etc., etc. The distinction, if there is, is in the manufacture of drugs. It is wrong to argue that thousands of patients are treated successfully by old system, in the villages where there is no scientific treatment available, and the ignorant, backward villager has perforce to resort to it. The cheapness of their drugs is also an attraction to the people of India.

The Western drugs would be as cheap if the systems of patents was abolished and the drugs manufactured for use and not for huge profits. The exorbitant fees demanded by the experts in the profession of all systems, are the consequences of the prevalent capitalist system, selfishness, want of fellow feeling and brotherhood. The rulers of all the countries where capitalism prevail encourage this practice. Besides the old systems do not possess preventive medicine and they cannot devise one as prevention of diseases is based on the theory of germs. This theory is an anathema to the old systems. Any medical system which cannot have a preventive side to it cannot be progressive. The very fact that these systems have been functioning to a greater extent in the villages of India, and have not improved sanitation in those villages even by an iota, is a proof of the above statement. It is for these reasons that the mortality among the adults and infants is the highest in India compared to other countries where preventive system prevails, and the mortality figures will not improve if the authorities also slack the scientific bent of mind and persist in their course of synthesis.

To let loose men of three years medical course on the villagers on the ground of expediency and cheap medical aid is an indication of the little value the authorities attach to the well-being and the life of the villagers. It will be a fraud and deception practised on the villagers as these dressers, or hospital assistants or under whatever name they go, will not be able to do justice to themselves nor to the villagers. As they will only exploit the credulity and human suffering there. In the end they will be a great nuisance to the big villages and small towns where these quarter-baked professionals will in all probability settle after their contract with the Government ends, as full fledged doctors. This inference is not from my imagination, but can be drawn from the actual facts if one sees for himself, what is happening in the big towns at present. The unbaked doctors, compounders and dressers going about as medical men and treating ignorant and even uneducated persons without any responsibility and proper knowledge of drugs used and their effect on human beings. The boldness and confidence to treat all diseases that these compounders and quacks have, is not due to the knowledge the more he comes to know of his limitations. Treatment of diseases cannot be dealt on the same lines as social education, co-operative movement or even running the administration where a person possessing a certain degree of common sense, holding certain views, possessing certain label or the hallmark of a certain party can be entrusted, for it is a question of life and death, where the men of a noble profession have to value the lives of patients just as dear as their own. In time and with scientific research the complex human nature will be open to the doctors. Nothing is unknowable to science but capitalism, militarism, religion and nationalism retard this progress. There is no doubt that many deaths are due to the mistakes and errors of the medical men, this is the case because all those that pass the medical course are not fit for practice, but they might do better in the field of research, public health, bacteriology, etc., etc.

What I have said about the old system of Ayurvedic and Unani is also applicable to Homœopathy. Hahnemann might have argued his case in those days but would not be able to do so now. I do not know what is Government's conception of registered medical practitioner; if it is the same as detailed in the Medical Registration Act, then registration of Unani, Ayurvedic and Homœopathy will be a mere farce and will only create confusion and chaos in the country which cannot be fully estimated at present.

My object in expressing my ideas is to rouse not only the I.M.A. and the medical profession from their complacency but also the well-wishers of the Indian people to their sense of responsibility as in my opinion the proposal of the authorities will be detrimental to the interest of the Indians. I shall have my reward if the medical profession takes me to task for this temerity. I am etc.

(Dr.) George De Silva.

Jubbulpore,
4-4-49.

CURRENT MEDICAL LITERATURE

Structural and Functional Alterations of Liver

Franklin and others (*J. Lab & Clin. Med.*, **33**:435, 1948) compared the histologic picture of the liver as seen in biopsy specimens obtained by aspiration or laparotomy from 130 patients with various types of hepatic disease with tests of hepatic function performed at the time of biopsy. Thirty-five of these patients were repeatedly studied. The incidence of diffuse damage to hepatic cells, focal necrosis, regeneration, distorted reconstruction, periportal activity, fatty metamorphosis, and mobilization of Kupffer cells was compared statistically with the results of each of different hepatic function tests. A significant correlation was found between diffuse damage to hepatic cells and albumin/globulin ration, cephalin-cholesterol flocculation, thymol turbidity, and retention of sulfobromophthalein sodium; a lesser degree with highly elevated serum bilirubin, reduced plasma vitamin A, increased prothrombin time, and slightly elevated alkaline phosphatase. Correlations were not elicited between parenchymal damage and total serum protein, total cholesterol, cholesterol-ester ratio, urinary urobilinogen, stool urobilinogen, alkaline phosphatase in general (and markedly elevated alkalin phosphatase specifically), nonprotein nitrogen or sedimentation rate. Focal necrosis, in contrast to diffuse damage to hepatic cells, was not associated with significant changes in hepatic function. The same was found with fatty metamorphosis. Regeneration showed a correlation with increased thymol turbidity. Distorted reconstruction of the lobular pattern (as seen in cirrhosis) was related to cephalin-cholesterol flocculation, thymol turbidity and elevation of sedimentation rate. Kupffer cell activity appeared related to elevated serum bilirubin and pathologic albumin/globulin ratio.

Central Nervous System Involvement During Mumps

Brown and others (*Am. J. Med. Sc.*, **215**:434, 1948) write that the involvement of central nervous system before, during or after an attack of mumps is well known. It may be due to virus of mumps or by activation of a neurotropic virus by the virus of mumps. The clinical signs are headache, nausea, vomiting, mental confusion, etc. To determine the manifest and non-manifest nervous system involvement the authors did regular lumbar punctures in 77 cases of mumps. 33·7 per cent showed pleocytosis in C.S.F. while only 11·7 per cent showed clinical signs of C.N.S. involvement. Among patients who had epididymo-orchitis 42 per cent showed pleocytosis. Though most of the cases are benign, authors report one case who had severe C.N.S. involvement and had not completely recovered at the end of two and a half years.

Allergic and Vasomotor Rhinitis

Knox (*South African M.J.*, **23**:155, 1949) writes that thirty-six cases of nasal allergy were treated with anthisan; 70 per cent., by adjustment dosage, were given complete subjective relief so long as they continued to take the original minimal effective controlling dose. This figure is in accord with the results published by Feinberg *et al* using benadryl and neoantergan, and by Calder using anthisan.

There is no evidence that when the drug has been taken for a long time, the effective dose gradually becomes smaller, nor is there any evidence of increasing tolerance.

There has been nothing in this series of cases to suggest that the long-continued exhibition of the drug over months produces any ill-effects.

Diet in Peptic Ulcer

Meulengracht (*Practitioner*, **162**:19, 1949) writes that a patient does not develop an ulcer through eating. Ulcer patients are much more accurately described as "starvers," as restless, extremely active persons who eat too little, not often enough, and who bolt their food. It is important to keep these facts in view when planning the diet of an ulcer patient.

Treatment of the Painful Ulcer—It consists of 1. Rest and relaxation. 2. A gradually increasing ulcer diet, adequate qualitatively and quantitatively, with frequent meals. 3. Alkali and belladonna. 4. No smoking.

Rest and relaxation—The patients possess a particular nervous constitution ("ulcer constitution"), they belong to the energetic, restless type, which has been accentuated in a large proportion of them by the incidents of every day life: a forced tempo, anxiety and restlessness, sorrow and care. Therefore rest and relaxation ought to constitute an important perhaps the most important factor in the treatment, with freedom from mental strain.

Diet—It may be taken as a basic principle that it is advantageous to begin with a soft, non-irritating, semi-fluid diet, and then gradually to increase it by the addition of more and more courses, so as to arrive at the end of a month at a varied and suitable diet that can be maintained without causing the patient or the domestic staff great inconvenience.

The diet should be sufficient qualitatively and must also be adequate quantitatively. A patient on an ulcer cure must put on weight.

The most important point of all in the diet: *the frequent meals*. A meal every two hours, though not during the night. Naturally every meal cannot be a large one.

Drugs—The author uses the following mixture:—

Sodium bicarbonate	.. ..	47 per cent.
Magnesium subcarbonate	.. ..	47 „
Milk sugar ..	.. ..	3 „
Extract of hyoscyamus	.. ..	3 „

One teaspoonful thrice daily.

This mixture is to be taken at 9 a.m., 3 p.m. and 9 p.m., partly in the hope that the last dose will counteract any possible nocturnal pain that may arise. If there is nocturnal pain the patient must take an extra teaspoonful or eat a little "night food."

Smoking: It is the wisest course to forbid tobacco and to advise a small extra meal rather than a cigarette.

When the patients have completed the month's rational cure they may be discharged, but with a number of instructions, preferably written:—(1) Keep to plain diet for another four months. (2) Take frequent meals, preferably every two or three hours. (3) Take the powder for another three or four weeks, but in decreasing amounts. (4) Abstain from smoking tobacco or smoke only a little. The most important of these rules is the taking of frequent meals.

Treatment of the Bleeding Ulcer—The treatment that is employed by the author for bleeding ulcer, that is to say for haematemesis and melaena even in their severest forms, is the following:—

(1) A full puree diet.

(2) Ferrous lactate, 2 tablets of 0·25 gm., three times daily.

(3) One or more blood transfusions in severe cases.

The pure diet comprises the following meals:—

6 a.m.—tea, white bread and butter.

9 a.m.—oatmeal with milk, white bread and butter.

1 p.m.—dinner, including a variety of dishes.

3 p.m.—cocoa.

6 p.m.—white bread and butter, slices of meat, cheese and tea.

The patients are encouraged to eat *ad libitum;* water and milk are put on the table, and they should drink as much as they like.

In the great majority of cases a blood transfusion will be unnecessary, but in severe cases it will be beneficial or may even save the paient's life. The patients to whom special attention must be paid and in whom it is necessary to be prepared for blood transfusion, are the older ones with profuse or repeated haemorrhage, particularly when it mainfests itself as haematemesis.

The patients are allowed to move freely in bed. After about a fortnight they are permitted to get out of bed in order to go to the W.C., shave themselves, and the like. In about a month's time they are discharged with instructions that they must adhere to a bland diet and take frequent meals as prescribed for painful ulcer. As a rule I give neither alkalis nor belladona in the treatment of haematemesis and melaena, as there is usually no pain.

Treatment in Symptom-Free Periods—The patient is allowed to eat at regular intervals and frequently, to take things quietly, to try to avoid vexations and worries, and to refrain from too much nervous cigarette smoking. They are also warned against cold and catching chills in spring and autumn.

Indications for Surgery—In the case of the non-bleeding peptic ulcer the author maintains that operation, i.e., partial gastric resection, is indicated if the patient has had ulcer symptoms for more than five years and has had two courses of medical dietetic treatment without any lasting effect.

In the case of the bleeding peptic ulcer the author is more willing to consider operation for some carefully selected cases of severe haematemesis, i.e., when the patient is more than forty years of age, has persistent or repeated bleeding manifesting itself as haematemesis, and threatens to die in spite of repeated blood transfusions. In addition, there must be no serious contraindications to operation, the presence of an ulcer should have been proved by X-rays, and an experienced surgeon should be available. The operation recommended is a partial resection of the stomach.

Streptomycin Resistance in Pulmonary Tuberculosis

Crofton and Mitchison (*Brit. M.J.*, **2**:1009, 1948) from an analysis of the results observed in 13 patients at the Brompton Hospital observe:

Increased resistance to streptomycin was observed in strains of tubercle bacilli isolated from 12 out of 13 cases of severe bilateral pulmonary tuberculosis treated with 2 g. of streptomycin a day for four months or more.

The rise in resistance varied from 4 to over 4,000 times that of the control strain H37Rv. Resistant strains were isolated from the 42nd day of treatment onwards. In the individual case resistance usually rose fairly rapidly to a plateau and then remained at about the same level.

When bacilli persisted in the sputum the numbers at first fell but after resistance had developed tended to rise again.

Streptomycin-resistant strains were isolated from three cases which subsequently became sputum-negative.

The time at which resistance developed and the degree of resistance attained were related to clinical progress before, but not after, resistant strains had been found. In cases which did poorly at first resistant strains were usually isolated early and attained a higher degree of resistance.

The higher the degree of resistance the more rapidly did it appear.

Only two cases showed any great change in clinical course coinciding with the time when resistant strains were first found.

The bearing of these results on the problem of the mechanism of development of streptomycin resistance and its clinical significance is discussed.

Urea on the Bactericidal Action of Sulphonamide Drugs

La Londe and Gardenar (*J.A.M.A.*, **138**:406, 1948) write that they successfully treated with urea and sulphadiazine a case of meningitis due to Alcaligenes faecalis which did not respond to penicillin and sulphadiazine, and in which streptomycin was not tolerated; a case of meningitis due to Klebsiella pneumoniae, which developed while the patient was receiving prophylatic doses of penicillin; 2 cases of meningitis due to Escherichia coli as well as a case of meningitis probably due to Staphylococcus albus. Since this form of therapy is simple, safe and effective it should be tried in sulfonamide-resistant infections before resorting to streptomycin.

A case of tuberculous meningitis and 1 case of meningitis due to Torula failed to respond to urea and sulphadiazine.

Streptomycin in Tuberculosis

Bernard and Lotte (*Rev. de la Tuberc.*, **12**:165, 1948, Ref. *J.A.M.A.*, **381**:246, 1948) treated with streptomycin 225 patients, 78 of whom had tuberculosis of the meninges, 54 miliary tuberculosis, 64 non-miliary tuberculosis of the lungs, and the remainder tuberculosis of the larynx and pharynx. The average dose administered by intramuscular route was 1·5 gm. (1,500,000 units) for twenty-four hours. Occasionally the daily dose was increased to 2 gm., but some patients could tolerate only 1 gm. or even less. At the initiation of the treatment all the patients were given additional three to eight intraspinal injections of 50,000 to 300,000 units, but in general 100,000 units of streptomycin every second day. The treatment by intramuscular route was continued for several months. There were recurrences in 14 to 22 patients in whom treatment was discontinued spontaneously after two to three months. In 5 patients there were recurrences in the course of the treatment after three to five months and in 1 patient even after seven months of treatment. Untoward reactions consisted of vomiting, vertigo and, in 1 case, erythroderma, but in the majority of the cases these reactions did not recur when the treatment was continued after temporary discontinuance of three to four days. Vestibular disturbances were observed in 39 per cent of the patients. Thirty-one of the 78 patients with tuberculous meningitis were alive after

six to eight months. In 22 of the 54 patients with miliary tuberculosis meningitis supervened before, during or after treatment. Thirty-six of the 54 patients, mostly those without meningitis, survived and presented a complete clearing up of their roentgenograms. Streptomycin proved to be a valuable preoperative or postoperative measure in cases of non-ulcerating pulmonary tuberculosis. In laryngeal and pharyngeal tuberculosis the dysphagia subsided and the dysphonia and the lesions improved as result of the treatment with streptomycin. Improvement was obtained in isolated non-stenosing form of bronchial tuberculosis.

Treatment of Leukemia

Moeschlin (*Helvetica Med. Acta.*, **15**:107, 1948, Ref. *J.A.M.A.*, **137**:1633, 1948) states that urethane, arsenic and roentgen irradiation exert only a palliative effect on leukemia. One should try to limit treatment to urethane or arsenic as long as possible because administration of these drugs in therapeutic doses prevents mitosis of the pathologically degenerated cell groups. In contrast to roentgen irradiation it does not affect the erythropoiesis. Roentgen irradiation should be practised in cases which from the beginning are not amenable to treatment with drugs or in cases which become refractory after prolonged treatment with drugs. Irradiation is a valuable supplement to the treatment with drugs in patients with a very large spleen or with extensive involvement of lymph nodes in spite of improvement of the blood picture. Urethane is the treatment of choice for chronic leukosis because the drug has no toxic effects. Its mode of action is probably that of an elective control of the karyokinesis of the pathologically degenerated leukemic cells and a stimulating effect on the erythropoiesis. Satisfactory results were obtained against chronic myeloid leukemia with continued oral administration of 5 to 15 drops of Fowler's solution (solution of potassium arsenite) three times per day. With this treatment the capacity for work was maintained in a woman for nine years. Urethane was administered by mouth in doses of 3 to 4 gm. per day. In the majority of cases the decrease in the number of granulocytes began only after ten to fourteen days. In contrast to Paterson, the author used urethane for continued treatment in small daily doses of 0·5 to 2 gm. to prevent a new increase in the number of immature cells in the blood after the leukocyte values had been restored to normal. Advanced cases seem to be benefited by this treatment. The terminal occurrence of paramyeloblastic leukosis which characterizes the transition of chronic myelocytic leukosis into an acute form cannot be prevented by any of the available methods of treatment. This applies also to the primary paramyeloblastic forms of leukosis in which temporary remissions may be obtained with arsenic and frequent blood transfusion.

A Case of Dicoumarol Poisoning

Miller and Drucquer (*Brit. M.J.*, **25**:904, 1948) in reporting a case of dicoumarol poisoning observe that the patient, a man aged 57, was admitted to hospital on account of severe haematuria on Oct. 4, 1947. He had read in the daily papers that dicoumarol had been used for coronary thrombosis. It was revealed that on his own initiative he had taken 100 mg. daily for nine or ten days. There was a latent period of seven days before signs and symptoms appeared. The first symptom was abdominal pain, which preceded sudden gross haematuria by 24 hours.

Within 24 hours of being admitted to hospital the patient's general condition deteriorated rapidly. Multiple petechial haemorrhages occurred in the skin and subcutaneous tissues, then melaena and a massive sublingual haematoma developed which increased in size hourly. The initial B.P. was 160/115. The tongue became the size of a tangerine orange and immediately threatened to obstruct his airway. Despite the immediate transfusion of blood the swelling of the tongue increased and a tracheotomy was performed while transfusions were continued. A considerable submandibular haematoma developed and the patient was in extremis. His B.P. was 90/74 on Oct. 7. The anoxaemia was relieved but haemorrhages continued. A pint (570 ml.) of stored blood was given, with vitamin K injections intramuscularly; the response was not satisfactory, and haemoptyses occurred. X'ray examination with a portable apparatus revealed multiple shadows in the lung fields. Further transfusion of 1 pint of fresh blood was given on Oct. 8, but his condition remained precarious. A further 3 pints (1·7 litres) of blood was obtained from the relatives, and this was given by slow drip over the next 48 hours. His condition gradually improved and the haematuria and petechial haemorrhages decreased. Whole-blood transfusion had a dramatic effect on the prothrombin times.

The case reported emphasizes the grave danger of the use of the anticoagulant dicoumarol without adequate laboratory control. It also stresses the importance of the use of fresh blood and not stored blood in the therapeutic control of haemorrhage from dicoumarol overdosage. Vitamin K and stored blood are without effect. There is a definite latent period before therapeutic measures can take effect, and various mechanical factors may have to be dealt with. The reaction to treatment, when it occurs, is dramatic, and no case can be considered hopeless. In this instance, despite the severe and generalized nature of the haemorrhages, complete recovery occurred.

Experimental Studies on the Therapy of Schistosomiasis

Kikuth and Gonnert (*Ann. Trop. Med and Hyg.*, **42**:251-257) give in the following lines the summary of their observation:—

Chemotherapeutic investigations on experimental infections of mice and monkeys with Schistosoma mansoni, have led to the discovery of a new series of effective compounds belonging to the xanthone and thioxanthone class. These compounds, which are named miracils, have differing activities in mouse and monkey schistosomiasis. In mice, miracil B is highly effective. In monkeys, miracil D is the best and produces cure in doses of 1×20 mgm. per kgm. Since the parasite is the same both in mouse and monkey, this difference in activity can be due only to the physiological differences in the two species of animals. Since monkeys physiologically resemble man in many ways, we believe that miracil D will be the best preparation for human schistosomiasis also.

Parenteral administration of miracil D is not practicable, on account of marked irritation at the site of injection. Complete pharmacological investigation in monkeys was not possible. Miracil D exerts irritative action, as shown by vomiting and diarrhoea after large doses, but severe or fatal

injury in monkeys by miracil D has not yet been observed. The loss of weight frequently observed after miracil D is believed to be due not so much to a direct injury by the drug as to an indirect injury from the death and injury of the worms through successful treatment. This is borne out by the maintenance of weight after treatment with 2×100 mgm. per kgm. miracil D by mouth in infections with worms of different ages. In cases where a therapeutic action was produced—i.e., in mature or 25-day-old worms—there was some loss of weight; when the worms were four or 15 days old, treatment was unsuccessful and the weight remained unchanged.

In animal experiments miracil D has a practical advantage over present-day preparations used for schistosomiasis in that it can be given by mouth. A second great advantage is the brevity of the treatment. In judging the effectiveness of the preparation it has to be remembered that stools do not become free from eggs until 14 days after the beginning of treatment, even when a cure has been produced.

If miracil D, which is proposed for clinical trial in view of the animal results, should prove insufficiently active, or even completely inactive, it would be desirable to test the related compounds for their value in human therapy. In that case we would first recommend miracil B or the corresponding compound in the thioxanthone series, both of which are particularly effective in mice.

The aim of our chemotherapeutic work was discovery of a compound which could be given by mouth and would be suitable for mass treatment. This aim seems to have been accomplished in the discovery of miracil, at any rate so far as experimental infections can show. By 1941, with the discovery of miracil D, the work had progressed far but such trials could not be carried out since communication with schistosome districts was interrupted by the war.

Injection of Sulphetrone & Diasone in Leprosy

Chatterjee (*Antiseptic*, **46**:282, 1949) from the leprosy department of the School of Tropical Medicine writes that results of injecting Sulphetrone and Diasone, in small doses, in 17 cases are quite encouraging. A maximum of 5 c.c. of a 3·3 per cent. solution has been used.

Small doses of medicine by injection, although not producing any appreciable blood level of the drug, produced clinical improvement without producing anaemia.

This method of treatment is considered more economical and safe than when these drugs are given per mouth.

It is suggested that more extensive trials should be undertaken to find out the minimum dose which will give satisfactory clinical and bacteriological results, without producing anaemia or any other toxic symptoms.

Preparation of the drug—Solution of Sulphetrone was made in normal saline (0·85 per cent.) by dissolving 10 tablets Sulphetrone in 150 c.c. of saline. Each tablet contained 0·5 gm. of Sulphetrone. Hence a 3·3 per cent. solution was obtained. The solution was brought to boil. On cooling, some insoluble particles deposited at the bottom of the container, and they were eliminated by filtering. The solution was put in ampoules and sterilised in an autoclave before use. Diasone solution was prepared in the same way.

Dosage and method of injection—In the beginning an initial dose of 1 c.c. of half the above strength (1·65 per cent.) was given, i.e., a dose of 0·016 gm. of the drug was given to a number of patients, and when it was found that this dose was well tolerated, the full strength solution (3·3 per cent.) was used in rising doses beginning with 1 c.c. (0·03 gm.) of the drug. Later the routine was to start with this dose (1 c.c. of 3·3 per cent.) and this was gradually raised to 5 c.c. (0·15 gm.). The injections in all cases were given intramuscularly twice a week.

The Hazards of X-Ray

Medical science advances rapidly. New discoveries are announced frequently. This makes the physician's responsibility heavier and heavier. He has to know the old science and the new also. He has to know the power and the hazards of new devices and must use good judgment in balancing probable good against possible harm.

Think of radiation! The engineers and the nuclear physicists keep developing new apparatus. New researches, including some of the health physicists and biologists connected with the development of the atom bomb, have taught us more about the hazards of the old apparatus, also, such as X-ray and radium.

Even small quantities of roentgen or radium rays can prove damaging. Radiation injury to the skin sometimes leads to cancer, coming even many years after. Some of these patients did not show immediate injury, even so much as redness of the skin. Repeated or continuous irradiation of the whole body can produce aplastic anaemia, sometimes leukemia, even when the individual doses have been moderate.

Roentgen rays for diagnosis (films and fluoroscopy) are safe only because radiologists have a long tradition of being careful and because films and screens are so sensitive as to require rather small exposures. Examples of accidental erythema or redness continue to appear, and even of disastrous roentgen ulceration. Many of these come from fluoroscopy for bone setting and for removing foreign bodies. The hazard seems higher among surgeons and general practitioners than among X-ray specialists. Paradoxically, the smaller type of X-ray machines have provided most of the worst cases. Every radiologist has a collection of anecdotes to show how dangerous roentgen rays can be in the hands of those not specially trained.

In treating cancer big doses of radiation are used. Resulting damage to skin and normal structures is severe and obvious. Blistering is often only the proof that a thoughtful and conscientious therapist has given enough radiation to have a chance to cure. Such damage, including the possibility of late roentgen ulceration, or late roentgen cancer, is not too high a price to pay for cure of a cancer; regrettable, but at present necessary. Perhaps new medical discoveries regarding cancer will outmode the present radiation therapy.

Until then physicians will continue to apply radiation therapy. Patients will bear the accompanying damage. Radiologists must continually test and retest their judgment to see that it is dependable in applying such doses, and they must measure and remeasure the critical quantities of roentgen rays that are applied.

When benign conditions, not cancer and not lethal, are concerned the point of view is different. The situation is not desperate. If the disease does not threaten life, treatment that may do harm should be avoided, or treatment that may lead

to trouble later in life. Are radiologists too light hearted in advising a few hundred roentgens for subacromial bursitis? What degree of desperation should be demanded in this painful condition before inflicting the (rather mild) roentgen injury incidental to 300 r.? And if not relieved, how hany times shall the damage be compounded by repeated dosage? There is no "official" answer to this or to similar pointed questions in the therapy of acute and chronic arthritis. Such a dose may in fact be thoughtfully accepted in many a case, but in every instance it ought assuredly to be thoughtful and not "routine".

In cases of postoperative parotitis or of gas gangrene, such moderate doses are given more boldly, even though one is less sure of their effectiveness, for the acute danger of the disease is apparent.

In dermatitis, especially allergic dermatitis, roentgen radiation is often an almost magical palliative. Recurrences are common. Treating the recurrence increases the total irradiation. After many recurrences the total mounts to the danger limit, but one also foresees that the patient will have been well persuaded by the many temporary successes that roentgen irradiation is the treatment he needs. His demand for another treatment may be well nigh undeniable. Foresight therefore warns that one should not use roentgen rays in dermatitis until literally everything else has been tried most patiently.

Many babies have red birthmarks, hemangiomas, typically "strawberry marks." These often respond well to roentgen rays or radium. Heavy doses have been followed in some by equally unsightly scars or telangiectases. A few have resulted in arrest of epiphysial growth and a deformed limb. There are reports that nearly all straw berry marks disappear spontaneously by the age of 5 years. In the face of this, a radiologist needs to be sure indeed that his irradiation is such as will do little damage to the skin and no damage to the bones.

Common warts are distressing to fastidious persons and on the sole of the foot can be crippling. Topical, surgical and medicinal treatments are often disappointing. Radiologists rather generally accede to a request to treat them, and many times succeed. Doses advised are not small in amount, and are tolerable at all only because small in area. Nevertheless, there are many instances of ulcers following roentgen irradiation even by trained radiologists. Perhaps it is too soon to condemn such therapy, but at least the treatment should not be undertaken lightly. One should be certain of the dose and area. Careless history taking or slovenly records can result in repeated irradiation of the same year. This can be disastrous, even if the interval between treatments has been long.

In attempts to stem the discouraging tide of hardness of hearing great enthusiasm has developed for radium irradiation of the mouth of the eustachian tube. This is being applied to children under the supposition that much adult deafness arises from years of interference with aeration of the tympanum. How good the statistical evidence is of this etiology of adult deafness is not yet established. One has no doubt of the effectiveness of irradiation in shrinking the hypertrophied lymphoid tissue. The real question, not yet answered, is how much late damage may develop from these irradiations. Although the total dose in milligram-hours seems small (1 per cent of what is often used in uterine cancer), yet the local tissue dose is not small, for the radium is only 1 or 2 mm. from the mucous membrane. Otolaryngologists might be inclined to feel that all they have to do is to buy or rent the proper radium applicator. The real difficulty is in judging whether or when a damaging therapy is justified.

A therapeutic irradiation that has long been viewed askance by many radiologists is its use for epilation to cure ringworm of the scalp in children. In the early days when equipment unreliable and measuring instruments unsatisfactory, alopecia was a frequent sequel. Today many radiologists and many dermatologists who do have adequate equipment nevertheless refuse to do therapeutic epilations. They feel that the chances that permanent alopecia will result are not negligible and that the blame for such an accident is beyond their willingness to face. This attitude seems less than worthy of our profession. If any patients with ringworm of the scalp need irradiation, then duty demands that one do it if technically equipped, or if not so equipped that one know whither to refer the patient to get it done.

Most cases of tinea capitis can be cleared quickly or slowly by local treatment with proper medicaments (iodine, fatty acids, etc.). Some, especially Microsporon audouini, will not clear and would persist until puberty so alters the sebum as to make the soil no longer suitable for the organism. Epilation, however, results almost always in cure. Pulling the hairs by hand is so tedious as to be impractical. Roentgen epilation is practical and has been demonstrated to be safe, provided the technic is painstakingly correct. Even so, a perfectly even effect over the whole scalp seems almost impossible to attain. The dosage must be precise. Some careful radiologists measure the output of the tube immediately before every epilation treatment. When such care is taken alopecia rarely follows.

A conscientious radiologist might well equip himself to offer this service. He would undertake it in close consultation with the practitioner, with the help of a dermatologist if necessary. Considering recent advances in the topical (ointment) treatment of tinea capitis, he would insist that modern methods first be persistently and carefully applied under competent control for three months. He ought to have cultural proof that the infection is in fact M. audouini, that he is not dealing with mere reinfections from a mangy dog or cat. So safeguarded, one could conclude that a patient would be well advised to risk the tiny chance of alopecia in order to escape the overwhelming probability of persisting scalp infection throughout all the remaining years to puberty.

Roentgen treatment for benign conditions should be used only with a vivid appreciation of its capacity for harm and with an overt evaluation of its presumptive benefits weighed against the known and possible injuries inseparable from its use in effective dosage.—Ed. *J.A.M.A.*, **138**:214, 1948.

Symptoms Masked or Modified by Chemotherapy

Archer and others (*J.A.M.A.*, **138**:645, 1948) write that symptoms were markedly altered by chemotherapy in the following conditions: (1) diverticulitis with cancer, (2) fibrosarcoma, (3) perinephritic abscess, (4) lung abscess, (5) acute cholecystitis, (6) mastoiditis, (7) subphrenic and subhepatic abscess, (8) empyema and (9) osteomyelitis.

The roentgenologist must accept an increasingly large share of the responsibility for correct evaluation of progression or regression of pathologic processes due to infection when treated by chemotherapy.

Adrenal Insufficiency

Thorn and others (*J.A.M.A.* July 1948) describe a test for adrenal cortical insufficiency. If 25 milligrammes of purified pituitary adrenocorticotropic hormone are administered to normal subjects there is a fall in the number of circulating eosinophile cells, and an increase in excretion of uric acid within four hours of the intramuscular injection of the hormone. Patients with Addison's diseases failed to show these changes. The fall in the number of eosinophile cells in normal subjects is 50 per cent more below the level before the test is made, and the uric acid-creatinine ratio increase by more than 50 per cent. If the eosinophile cell response fails to occur a complete abscence of adrenal cortex reserve may be assumed. The urine before and after the injection (for three hours after) is collected, and the uric acid-creatinine ratio estimated. This shows a definite rise with normal subjects, but none in the presence of Addison's disease.

Modern Management of Megacolon

Bosworth, Stein and Lisa (*Am. J. Surg.*, June 1948, Ref. *Med. J. Australia*, **36**:244, 1949) review the pathology, diagonosis and aetiology of megacolon and give an analysis of the results obtained by methods of treatment advocated by various authors. They state that the treatment of megacolon today is in a state of flux, there being wide divergence of opinion as to what is the best method. The procedures practised are conservative management, spinal anaesthesia, sympathectomy and colon resection either subtotal or total. Conservative measures including deit of low roughage content, rectal dilatations, colonic flushes, mineral oil, vitamins, mild catharsis and meticulous supervision over a long period should in most cases be given a thorough trial. Administration of parasympathetic stimulants such as mecholyl bromide is recommended by many authorities. Spinal anaesthesia is used as a therapeutic adjuvant to a medical regime and also as a disgnostic test to predetermine the value of sympathectomy. Sympathectomy is recommended by some authorities only in early or moderately advanced cases in which organic changes in the bowel wall are not too great. The danger that bilateral sympathectomy may produce sterility in the male is stressed. Subtotal colonic resection is recommended by many authorities after a thorough medical regime has been tried and failed; they prefer this to sympathectomy, which they believe does not appreciably alter the underlying disorder. Total colonic resection is recommended by Grimson in advanced cases because of the fact that megacolon may reappear in another segment of colon years after a subtotal resection

Early Rising After Operation

To make patients get out of bed a day or two after operation is not a new idea, and though this practice is rapidly becoming more popular there is still considerable opposition to it in many parts of Britain. Emil Ries (*J.A.M.A.*, **33**:454, 1899) is reputed to have been the first advocate of early post-operative ambulation in America. His paper was presented at a meeting of the American Medical Association in 1899 and was given a most favourable reception by all the succeeding speakers except one. It is, therefore, rather surprising that Ries's advice was not widely accepted. Perhaps it was because tradition and habit die hard in medicine, and this is especially true of methods sanctioned and advocated by great authorities. In this country we have not lacked distinguished supporters for the therapeutic importance of rest: John Hunter described it as the most powerful aid which the surgeon could bring to disordered tissue; Hugh Owen Thomas stated that "rest must be enforced, uninterrupted, and prolonged"; and there are few of us who were not advised as students to read the classical essays of Hilton (Rest and Pain, 1892, George Bell & Sons, London).

Up to 1939 confinement to bed for ten to fourteen days after a major operation was the usual custom in this country and the United States. Continental practice was more adventurous, and early rising was occasionally advocated in Russia and Germany in a manner which many considered almost barbaric. But shortage of hospital beds during the war and the pressing demands on man power encouraged a change of view, and there is now a growing and enthusiastic body of supporters of early post-operative ambulation. The majority of patients can readily get out of bed by the third or fourth day after operation, and many of them might with advantage get up even earlier. There is more than historical interest in the fact that Dr. Ephraim McDowell, who did the first successful ovariotomy in 1809, found his patient up making her bed on the fifth day after operation. (Haggard—*Surg. Gynec. & Obstet.*, **58**:415, 1934).

What are the benefits of early ambulation? First, morale is greatly improved by early rising, and most patients, having overcome their natural apprehension, are gratified to find how comfortable and fit they are. General health and strength are better maintained, and convalescence is more rapid. Secondly, retention of urine, together with those difficulties associated with the use of the bed-pan, is almost entirely obviated, and the work of the nurses is made easier. For patients who are not fit enough to walk to the lavatory the wheeled chair described by Bohmansson and Malmros (*Lancet*, **2**:509, 1947) which can be pushed over a w.c., is of considerable value. The patient is thereby spared embarrassment and discomfort, while his neighbours avoid those unpleasant odours which are commonplace in hospital wards. Thirdly, as many authors have reported, early ambulation diminishes the incidence of post-operative pulmonary collapse, and if collapse does occur it generally resolves more rapidly. Churchill (*Surg. Gynec. & Obstet.*, **44**:483, 1927) demonstrated an appreciable reduction in the vital capacity after abdominal and hernia operations, while Cutler (Proceedings of the International Assembly of Inter-State Post-Graduate Medical Association of N. America, 1941 p. 232) has shown that the vital capacity returns to normal in half the time if the patient is up and active. As a result of studying the diaphragmatic movements after operation Howkins (*Lancet*, **2**:85, 1948) concluded that so long as the patient had to remain in bed he should be in a comfortable recumbent position with free and frequent movement. Like Spalding (*Lancet*, **1**:643, 1946), he condemns the Fowler position and advocates early ambulation wherever this is possible. Finally, most workers believe that venous thrombosis and its sequelae are not so likely to occur if early rising is practised. According to some reports

these complications are lessened tenfold, but most authorities find that the incidence is not reduced by much more than half (ALLEN *et al*—*J.A.M.A.*, **128**:397, 1945). It is suggested by others that rising on or after the fourth post-operative day produces little or no diminution in thrombosis and embolism; the greatest reduction in these complications appears to occur when patients get up on the first or second day after operation.

The abdominal surgeon's chief anxiety about early rising has been the integrity of his suture line, and wound disruption and post-operative herniation were much feared. For these reasons metallic sutures, and especially stainless steel wire, have been advocated (ABEL AND HUNT—*Brit. M.J.*, **2**:379, 1948), but operation wounds will heal rapidly and securedly even without such desirable aids as non-absorbable sutures. Royster and his co-workers (*Surg. Gynec. & Obstet.*, **86**:565, 1948) showed that wound healing was as sound in ambulant dogs as in those which had been kept inactive, and Newburger (*Surgery*, **13**:692, 1943) found that wounds healed more rapidly in ambulant rats, thus confirming the earlier work of Kimbarovsky. Experience with human patients supports these findings. There is no published evidence that early rising increases the recurrence rate of inguinal hernia.

Contraindications to early ambulation after operation are peritonitis, severe ileus, shock and hæmorrhage, cardiac failure, and infective conditions of the legs which preclude such activity. It is sometimes argued that early rising is undesirable for the tired housewife who needs nothing so much as a good rest in bed. The reply to this is that the housewife need not be strictly confined to bed in order to enjoy a well-earned rest. A very real danger associated with the practice of early rising is the too early discharge of the patient from hospital; this must be strongly resisted. On a number of occasions early discharge from surgical care has been followed by fatal embolism or the development of a "white leg" when the patient was back at home. Some of the undoubted benefits of early ambulation will be lost and the practice brought into disrepute if it leads to neglect of the need for a period of close and careful post-operative supervision. A surgeon would be in a difficult position if he allowed a patient to be discharged on the fourth day after appendicectomy or the seventh day after cholecystectomy (as reported in some American Journals) and that patient subsequently developed a fatal embolus in the second week. Although no definite time limit can be set for the development of serious thrombotic complications, it would be wise to keep the patient in hospital for fourteen days after any major operation.

Early ambulation should not be regarded as a procedure to be practised only by surgeons. Patients transferred from a medical to a surgical ward are sometimes found to be suffering from the effects of prolonged bed rest, and it may well be prudent for the surgeon to get such patients up and about for a few days before operation. The dangers of going to bed were described in this journal about a year ago by Asher (*Brit. M.J.*, **2**:967, 1947), who drew attention to the need for changes in wards. Those who recommend early rising after operations will realize the defects of even the most modern hospitals in this respect. There is a serious shortage of comfortable chairs, and most patients would appreciate an adjacent sitting-room or recreation room. Washing and bathing facilities for up-patients are usually inadequate and there is a shortage of lavatories. Those responsible for hospital planning should bear these points in mind when new hospitals are built and existing institutions improved.—*Brit. M.J.*, **2**:1026, 1948.

TONSIL TAGS: CLINICAL AND PATHOLOGIC STUDY

GOOCH AND LILLIE (*Ann. Oto. Rhino. & Laryngol.*, **57**:957, 1948) from the analysis of the study of cases of tonsil tags at the Mayo Clinic and of the literature of this subject write:

It is clear that the physiology of the tonsil is poorly understood. This study also indicates that the presence of tonsil tags is difficult to demonstrate in many instances, and reliance should be placed on qualified otolaryngologists for this examination.

The common associated signs and symptoms of 171 patients who underwent operation for the removal of tonsil tags at the clinic in order of frequency were: (1) sore throats, (2) pain in the joints, (3) cervical adenitis, (4) lassitude, (5) loss of weight and (6) fever. The common associated conditions diagnosed in patients undergoing operation for removal of tonsil tags, in order of frequency, were: (1) arthritis, (2) fibrositis, (3) chronic heart disease, (4) chronic disease of the middle ear, (5) chronic renal disease, (6) affections of the eyes and (7) asthma.

The cause of tonsil tags is incomplete removal. Complete removal can be accomplished only when the thickened capsule is removed by sharp dissection.

The average tonsil tag can be described compositely as a bit of tonsil tissue of varying size convered by stratified squamous epithelium which also lines the crypts. The crypts contain increased amounts of keratin, cellular debris and leukocytes. Stasis, as a result of induration, is present in this crypts, a condition which provides suitable soil for infection. Ulceration of the epithelium lining the crypt is frequent. The lymphoid elements continue to be arranged in characteristic pattern with germinal centers remaining when a sufficient amount of the lymphoid tissue is present. When the lymphoid tissue is of such scant amount that only nests of it without germinal centers are seen, the stroma of the gland shows considerable increase in fibrous connective tissue, particularly in the subepithelial area and in the trabeculae in which the blood vessels course. The capsule is thickened and may contain isolated bits of lymphoid tissue or cystic areas of varying size. The entire gland is indurated and inelastic when compared to a normal whole tonsil. Tonsil tags were found to be more dangerous from a standpoint of infection than are whole tonsils. Diathermy tags studied presented the same pathologic qualities as those of operative tags but in greater degree.

POTENCY AND TOXICITY OF SOME SYNTHETIC OESTROGENS

BISHOP AND OTHERS (*Lancet*, **2**:764, 1948) write that a method is described for comparing the potency of oestrogens in man. It consists in giving the oestrogen daily by mouth in fourteen-day courses to amenorrhoeic women and recording whether oestrogen withdrawal bleeding takes places.

The results obtained indicate that dienoestrol is about a quarter, doisynolic acid about a fifth, and hexoestrol about an eighteenth, as potent as stilbœstrol.

Investigation of the incidence of "toxicity" indicates that stilbœstrol is more likely to produce nausea in therapeutic doses than are dienoestrol, doisynolic acid, and hexoestrol.

Reasons are given for choosing this end point, and for the failure to devise any other suitable method of assessment at different levels of oestrogenic response, such as the relief of menopausal symptoms, the production of an oestrous vaginal smear, and the suppression of lactation.

Endometriosis

Kyenne-Jones (*South African M.J.*, **23**:145, 1949) writes that excessive circulatory oestrogen (together with actual or relative progestogen deficiency) is the main factor causing local conditions favourable to the development of endometrium in ectopic situations.

There is little definite proof as to why some areas should be capable of reacting to oestrogen in such a way as to favour the development of endometrium. Bourne (*Brit. M.J.*, **1**:79, 1947) has recently reviewed the concept that certain tissues may contain a specific receptor which renders the oestrogen locally active. Such areas may also be the seat of ectopic decidua in pregnancy, and Weller (*Am. J. Path.*, **11**:287, 1935) has shown that ectopic decidua and endometriosis occur in similar situations.

Practical difficulties in the solution of this problem are many. There is a very great variation in the 'Normal' blood oestrogen level, and in humans it would be very difficult to assess the result of treatment e.g., with testosterone, because the effects of such treatment could only be checked by laparotomy. The only animal in which anything like endometriosis has been found is the cow unless Markee's corneal implant in the monkey can be considered endometriosis.

Experimental work is planned using the baboon as a subject and it is hoped to publish the results of this work from time to time in the future.

If it can be proved that excessive oestrogen production is the cause of the development of endometriosis, then the cause for the excessive oestrogen must be sought-possibly in the pituitary or even the hypothalamus.

Endometriosis as a Cause of Intestinal Obstruction

McGuff and others (*Surg. Gynec. & Obstet.*, **86**:273, 1948) report that the files of the Mayo Clinic between 1920 and 1946 contain records of 48 cases in which the diagnosis of "endometriosis of the bowel" had been made by pathologist. In 16 of these 48 cases pathologic material had been removed in an effort to alleviate clinical symptoms and signs of intestinal obstruction caused by cicatrizing endometriosis. The present study concerns these 16 cases. To make the diagnosis of endometriosis as a cause of intestinal obstruction, the possibility of its occurrence should be kept in mind in every case of intestinal obstruction in which the patient is a woman from 30 to 50 years of age. Acquired dysmenorrhea, menstrual periodicity of symptoms, sterility, rectal or pelvic pain, absence of loss of weight, the presence of associated uterine fibroids or ovarian cysts and a long history of intestinal symptoms which suggest progressive intestinal obstruction with frequent exacerbations at menstruation are most important in the diagnosis of this condition. Severe constipation, lower abdominal pain and distention are almost always present. If the obstruction is ileal vomiting is almost always present, but if the obstruction is colonic obstipation is more often present. An accurate preoperative diagnosis of intestinal obstruction caused by endometriosis can usually be made on the basis of the clinical history, digital examination, sigmoidoscopic examination and interpretation of the roentgenogram of the colon and the terminal portion of the ilum. The finding of a firm tumor in the rectovaginal septum or of tender palpable nodules plus the palpation of uterine fibroids and bilateral ovarian cysts is suggestive of endometriosis as the cause when intestinal obstruction is present. Sigmoidoscopic examination, with the presence of an extrarectal mass and an intact puckered mucosa, and a roentgenogram of the colon, with the presence of a long, inconstant filling defect with sharp regular borders and an intact mucosa, are the two most valuable adjuncts to diagnosis when the lesion is in the lower bowel. The treatment of intestinal obstruction caused by endometriosis is surgical. A preoperative diagnosis of endometriosis as a cause of colonic obstruction will obviate the necessary for resection of the bowel. In most instances surgical treatment will consist of bilateral ophorectomy or of panhysterectomy with or without temporary colostomy. The procedure of choice in obstruction of the ileum caused by endometriosis is ileal resection with or without preliminary enterostomy and with or without panhysterectomy as indicated by the presence of associated pelvic pathologic lesions. A plea is made for biopsy, frozen section and pathologic confirmation of the clinical diagnosis in all cases of endometrioma obstructing the bowel, as carcinoma can be positively excluded only by this method.

Surgery *versus* Radiotherapy in Carcinoma Cervix

Read (*J.A.M.A.*, **138**:88, 1948) at the Edinburgh Obstetrical Society opened a discussion on the relative merits of surgery and radiotherapy in carcinoma of the cervix. He said that there was a division of opinion in regard to stages 1 and 2 but little debate in respect to stages 3 and 4, which were generally unsuitable for surgery. In many clinics the Wertheim operation was abandoned when radiotherapy was generally established, but at the Chelsea Hospital for Women it had been performed continuously since Mr. Bonney introduced it in 1907. Even the surgical enthusiast had to admit that the results of radiotherapy compared favourably with those of surgery, but the question might be raised whether some of the fatalities after radiotherapy could be avoided by judicious surgery. The author suggested that there were seven indications for surgery in carcinoma of the cervix: (1) radioresistant growths proved either clinically or cytologically; (2) columnar-celled carcinoma; (3) vaginal vault stenosis; (4) the presence in addition of large fibroids or ovarian cysts; (5) associated salpingitis; (6) refusal of irradiation by the patient, and (7) pregnancy in the presence of cervical carcinoma. Considering the Wertheim operation after previous irradiation he expressed the opinion that although this did

increase the technical difficulties the operation was justifiable in radioresistant cases, experience at the Chelsea Hospital showing a five year survival rate of 44·4 per cent in 34 stage 1 and 20 stage 2 growths.

Foetal Death or Defect from Maternal Infections

It is now clear that German measles in the mother during the first four months of pregnancy often produces congenital defects such as cataract, heart disease, deaf mutism, and dental and mental abnormalities in the child. That this association was not confined to the particularly widespread epidemic in Australia in 1939 has been shown by the many similar observations made in England and in the United States. The most extensive defects have been noted when the maternal infection was contracted in the first six weeks of pregnancy, and Aycock and Ingalls (*Am. J. Med. Sc.*, **212**:368, 1946) suggested that the type of abnormality is directly related to the stage in pregnancy at which infection occurred; thus a cataract is likely to follow infection at six weeks, deafness at nine weeks, and a cardiac abnormality at five to ten weeks. Such precision is perhaps premature, but the observation that the chance of congenital defects is much higher when infection takes place in the earlier rather than later months is highly suggestive of a specific effect of the virus on the developing embryo.

The method of approaching this problem by interrogating the mothers of known defective children gives no indication of the probability that an infection will be followed by congenital defect. Yet until this probability is known no balanced judgment can be made on, for example, the advisability of therapeutic abortion. If it was established that congenital defect inevitably follows all cases of rubella in early pregnancy, then abortion might be a logical course. If, on the other hand, the risk, though definite, is not much greater than the normal 1 in 100 chance of congenital defect, then such drastic measures would be out of place. Several attempts to answer this pressing question have been made in the United States, notably by Fox and Bortin (*J.A.M.A.*, **130**:568, 1946) in Milkankee and Obek *et al.* (*Am. J. Pub. Health*, **37**:1328, 1947) in Massachusetts, who interrogated the married women notified as having german measles in a selected period. Ober and colleagues found that 4 out of 5 infants were lost by abortion or stillbirth or were born defective when their mothers had rubella in the first month of pregnancy, 4 out of 8 in the second months, and 3 out of 9 in the third month, but that the rate of loss or defect fell to 4 out of 27 where infection took place in the last five months of pregnancy. This supports the view that there is a very serious risk to the foetus when rubella is contracted in the first three months.

There are three possible effects on the foetus of rubella infection in the mother—(1) no effect, (2) congenital defect, and (3) death by abortion or stillbirth. The findings discussed by Swan (*Lancet*, **1**:744, 1948), and those of Ober *et al.*, suggest that the risk of congenital defects, is highest when rubella is contracted in the first four months of pregnancy. Fox and colleagues (*Ibid*, p. 746) report an inquiry into the incidence of anomalies following maternal measles, mumps, and chickenpox in pregnancy; but these childish infections are too rare in adults for convincing results to emerge. In a town of half a million inhabitants, over a four-year period, there were only 6 cases of measles, 23 of mumps, and 4 of chickenpox in pregnant women; and only in 1 case of measles did a congenital defect arise.

It is not going to be easy to decide the exact probability of infant defect or death following each of the commoner infectious diseases at each stage in pregnancy. Precise knowledge of the "exposure to risk"—*i.e.*, the total number of women who have contracted infections in pregnancy—can only be obtained by the co-operation of local health authorities so that the net can be spread widely and efficiently. Swan (*loc cit.*) pleads for an extensive long-term inquiry, based on the compulsory notification of all infectious diseases occurring in pregnant women. This should be combined with the close interrogation of all women presenting themselves at antenatal clinics. The following up of all pregnancies complicated by infections, both by clinical examination of the children born alive and by necropsy studies of those born dead, is a first essential of useful work in this field.—*Lancet*, **1**:760, 1948.

Tonsillectomy in Childhood

Glover (*Arch. Dis. Childhood*, **23**:1, 1948, in reviewing the literature on the subject of tonsillectomy in children, draws attention to the fact that in the 1st twenty years "far more than one and a half million tonsillectomies have been done on elementary school children in England and Wales." Its frequency in children of the well-to-do is more than three times as high as in children at elementary schools. For instance, at Eton in 1938 some 83 per cent of new boys had been tonsillectomized before entry. "In general, the wealthier and more exclusive the school the higher is the tonsillectomy rate, and for a boy 'to be born with a silver spoon in his mouth' seems to be one of the conditions which lead to tonsillectomy." The author summarizes the position as follows:—The most reliable indication for tonsillectomy in children is the occurrence of repeated attacks of acute tonsillitis which cannot be explained by extraneous infection. Bronchitis, asthma and nephritis are contraindications. The value of tonsillectomy in acute rheumatism is doubtful. To remove the tonsils to cure sinusitis is to put the cart before the horse. Tonsillectomy has no value as a prophylactic against common infectious diseases, with the possible exception of diphtheria. The operation is never urgent. It should not be done in winter or early spring, or during the prevalence of infectious diseases, especially poliomyelitis, measles and influenza.

Combined Diphtheria, Tetanus and Whooping-Cough Immunization

Miller and Ryan (*Pediatrics*, **1**:8, 1948), write that one hundred and twenty-six infants and children, of age ranging from six months to six years, were immunized with combined diphtheria and tetanus toxoids (aluminium hydroxide absorbed) containing H. *pertussis* vaccine. The children were divided into two groups, one group receiving two injections of 1 c.cm. of combined toxoids each containing 20 billion *H. pertussis* (this group comprised 64 boys and 62 girls), and the other group (54 boys and 49 girls) receiving, in addition to the total of 40 billion *H. pertussis* in the combined toxoids, an additional injection of *H. pertussis* vaccine, bringing the total

up to 60, 70, 80 or 100 billion. An interval of 12 weeks was allowed between the two injections, and the extra injection of *H. pertussis* given to group 2 children was given midway between the two injections. No re-injections were made during a four-year period. Two cases of whooping-cough occurred among the children in group 1; none was known to occur in group 2. Pertussis agglutinative reactions consonant with clinical immunity were obtained in 70 per cent of children during the first year after injection; in the subsequent four years serological immunity waned to 40 per cent. High levels of tetanus antitoxin were found during the first year, and levels of 0·1 unit or more in 98 per cent of subjects. Observation for two-and-a-half years of the children to whom extra dosage of *H. pertussis* vaccine was given between the two injections of triple mixture, showed that high agglutinative titres were thus produced in 84 per cent of children. The tetanus and diphtheria antitoxin titrations in this group were similar to those in the first group of children, and no positive Shick tests were found.

Oral Penicillin in Children

An important question in connexion with penicillin treatment is the extent to which oral administration is justifiable. Against the single advantage of convenience must be set its extravagance, the dose required being at least five times greater than that injected, and the grave disadvantage of marked irregularity of absorption. All observers who have carefully studied its effects have noted that absorption varied widely from case to case, with the result that in any series of patients some will inevitably absorb only inadequate quantities of a dose which will suffice for others. The general adoption of the oral route also opens wide possibilities of misuse, particularly the self-treatment of venereal disease. Giving penicillin by mouth to infants and children, however, is a rather different matter: they are naturally less tolerant of injection and require oral doses on a less extravagant scale. Buchanan (*Lancet*, **2**:560, 1946) suggested that infants under six months should absorb penicillin better than older children and adults because of the low HCl content of their gastric juice, and her own observations on 25 babies supported this. Satisfactory blood levels were obtained by adding penicillin to feeds in amounts equivalent to a daily dose of only 4,000 units per lb. (454 g.) of body weight.

Various authors, including Suchett-Kaye and Latter (*Brit. M. J.*, **2**:953, 1947) have reported favourably on the treatment of acute infections in young children with oral penicillin. Two publications on this subject, both from the U.S.A., tend rather to emphasize the limitations of the method than to acclaim its efficiency. Reisman and his colleagues (*Am. J. Dis. Child.*, **74**:19,1947) begin with the disquieting statement that "several children have been admitted to the wards of the Queen's General Hospital with advanced pyogenic diseases of various types after ineffective oral treatment with penicillin at home." They add that such treatment frequently makes the causative organism more resistant, but the implication that resistance has been acquired *in vivo* would have to be confirmed. They themselves treated 22 children, most of whom had upper respiratory tract infections, with large doses of oral penicillin, from 50,000-1,000,000 units being given every hour by day and every two hours by night. The results were "fair" in 12 patients; in the remaining 10 there was no apparent effect. In the majority no penicillin was detected in the blood, which is surprising in view of the amounts given, but this may perhaps be explained by irregular administration: case 4, for instance, receiving "1,000,000 units every hour while awake and every two hours while asleep" for five days, is stated to have had a total dose of only 7,800,000 units —an unexplained discrepancy. The patients' ages are not stated, and there are no bacteriological data. Possibly some of the infections may have been caused by insusceptible what many previous authors have observed—namely, the organisms. The more valuable part of this paper is a study of absorption after oral administration; this again emphasized importance of an empty stomach if absorption is to be adequate. Buffers and tablets were found to have no advantages, a simple solution in water being recommended.

A similar study was made by Markowitz and Kuttner (*J. Pediat.*, **31**:195, 1947). They gave a standard oral dose of 50,000 units to children at various times before and after meals, and found that a satisfactory blood level was usually maintained for two hours only when the dose was given after a 4-hour fast. According to these findings the continuous maintenance of a therapeutic blood level by the oral administration of any reasonable dose must be impossible. It may well be concluded that older children should be treated like adults and given penicillin intramuscularly, at least in the first stage of the treatment of any severe infection. The form of oral treatment with penicillin which has the best justification is the addition of the drug to the feeds of infants in the way suggested by Buchanan.—*Brit. M. J.*, **2**:867, 1948.

Temperature Recording in Sick Children

Moncrieff and Hussey (*Brit. M.J.*, **2**:972, 1948) write that simultaneous temperature-recordings in various situations-mouth, rectum, groin, and axilla—in an unselected series of 32 children show differences of some practical importance. It is argued that the axilla and groin should be discarded as sites for temperature readings.

Psychological objections to the rectal site have been urged, but the evidence seems more theoretical than practical.

The time factor may be a more serious consideration, for it is generally conceded that the nurse should stand by the child during the reading, whereas skin-recording, and even mouth-recording in older children, can be done for a group at once. What is needed is an instrument which not only claims to be a "half-minute" thermometer but actually records its maximum during this period.

The question of infection is obviously of great theoretical importance, as Green and Penfold (*Lancet*, **2**:89; 1947) have indicated, and especially when the mouth or rectum is used. The only solution is to have a separate thermometer for each child, kept permanently in a suitable disinfectant between readings. This is, in fact, the practice at many children's hospitals.